

THE MEADOWS
Abingdon, Virginia

TRAFFIC IMPACT STUDY

Prepared For:
Town of Abingdon

Prepared By:



November 2015

THE MEADOWS

Abingdon, Virginia

TRAFFIC IMPACT STUDY

Prepared for

**Town of Abingdon
Public Works Department
300 Lee Street, 24201
Bristol, VA**

DRAFT

November 2016

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Project No. 111714

TABLE OF CONTENTS

EXECUTIVE SUMMARY	V
INTRODUCTION.....	1
PROPOSED SITE USES	1
SITE LOCATION	1
LOCAL ACCESS	4
REGIONAL ACCESS	4
PEDESTRIAN AND BICYCLE FACILITIES	4
PLANNED IMPROVEMENTS.....	4
ANALYSIS OF EXISITING TRAFFIC CONDITIONS.....	5
EXISTING TRAFFIC VOLUMES AND INTERSECTION GEOMETRY	5
EXISTING CAPACITY AND LEVEL OF SERVICE	5
ANALYSIS OF FUTURE CONDITIONS WITHOUT DEVELOPMENT	13
BACKGROUND TRAFFIC VOLUMES	13
BACKGROUND CAPACITY AND LEVEL OF SERVICE	17
PROPOSED PROJECT	30
TRIP GENERATION.....	30
TRIP DISTRIBUTION AND ASSIGNMENT.....	31
ANALYSES OF FUTURE TRAFFIC CONDITIONS WITH DEVELOPMENT	39
PROJECTED TRAFFIC VOLUMES.....	39
PROJECTED CAPACITY AND LEVEL OF SERVICE	39
RECOMMENDATIONS.....	72
CONCLUSION	73
APPENDIX.....	74

LIST OF FIGURES

Figure 1- Site Plan.....	2
Figure 2- Vicinity Map.....	3
Figure 3- 2015 Existing Peak-Hour Traffic.....	6
Figure 4A- 2015 AM Peak Hour Existing LOS And Geometry.....	9
Figure 4B- 2015 PM Peak Hour Existing LOS And Geometry.....	10
Figure 5A- 2015 AM Peak Hour Existing Network Queue Lengths.....	11
Figure 5B- 2015 AM Peak Hour Existing Network Queue Lengths.....	12
Figure 6- 2018 Background Peak-Hour Traffic	14
Figure 7A- 2024 Background Peak-Hour Traffic.....	15
Figure 7B- 2024 Background Peak-Hour Traffic (w Interchange Improvements),,,, ,	16
Figure 8A- 2018 AM Peak Hour Background LOS And Geometry.....	18
Figure 8B- 2018 PM Peak Hour Background LOS And Geometry.....	19
Figure 9A- 2024 AM Peak-Hour Background LOS And Geometry.....	20
Figure 9B- 2024 PM Peak-Hour Background LOS And Geometry.....	21
Figure 9C- 2024 AM Peak-Hour Background LOS And Geometry (w Interchange Improvements)	22
Figure 9D- 2024 PM Peak-Hour Background LOS And Geometry (w Interchange Improvements)	23
Figure 10A- 2018 AM Peak Hour Background Network Queue Lengths.....	24
Figure 10B- 2018 PM Peak Hour Background Network Queue Lengths.....	25
Figure 11A- 2024 AM Peak Hour Background Network Queue Lengths.....	26
Figure 11B- 2024 PM Peak Hour Background Network Queue Lengths.....	27
Figure 11C- 2024 AM Peak Hour Background Network Queue Lengths (w Interchange Improvements)	28
Figure 11D- 2024 PM Peak Hour Background Network Queue Lengths (w Interchange Improvements)	29
Figure 12- Primary Trip Distribution and Assignment.....	32
Figure 13A- AM Pass-by Trip Distribution and Assignment.....	33
Figure 13B PM Pass-by Trip Distribution and Assignment.....	34
Figure 14A- Primary Peak-Hour Trips	35
Figure 14B- Pass-by Peak-Hour Trips and Assignment.....	36
Figure 14C- Total Site Peak-Hour Trips.....	37
Figure 14D- Total Site Peak-Hour Trips (w Interchange Improvements).....	38
Figure 15- 2018 Projected Peak-Hour Traffic	40

LIST OF FIGURES

(Continued)

Figure 16A- 2024 Projected Peak-Hour Traffic.....	41
Figure 16B- 2024 Projected Peak-Hour Traffic (w Interchange Improvements),,,,...	42
Figure 17A- 2018 AM Peak Hour Projected LOS And Geometry.....	45
Figure 17B- 2018 PM Peak Hour Projected LOS And Geometry.....	46
Figure 18A- 2024 AM Peak-Hour Projected LOS And Geometry.....	47
Figure 18B- 2024 PM Peak-Hour Projected LOS And Geometry.....	48
Figure 18C- 2024 AM Peak-Hour Projected LOS And Geometry (w Interchange Improvements)	49
Figure 18D- 2024 PM Peak-Hour Projected LOS And Geometry (w Interchange Improvements)	50
Figure 19A- 2018 AM Projected Peak Hour Queue Lengths.....	51
Figure 19B- 2018 PM Projected Peak Hour Queue Lengths.....	52
Figure 20A- 2024 AM Projected Peak Hour Queue Lengths.....	53
Figure 20B- 2024 PM Projected Peak Hour Queue Lengths.....	54
Figure 20C- 2024 AM Projected Peak Hour Queue Lengths (w Interchange Improvements)	55
Figure 20D- 2024 PM Projected Peak Hour Queue Lengths (w Interchange Improvements)	56
Figure 21A- 2018 AM Peak Hour Projected LOS With Mitigation.....	58
Figure 21B- 2018 PM Peak Hour Projected LOS With Mitigation.....	59
Figure 22A- 2024 AM Peak Hour Projected LOS With Mitigation.....	60
Figure 22B- 2024 PM Peak Hour Projected LOS With Mitigation.....	61
Figure 23A- 2024 AM Peak Hour Projected Queue Lengths.....	62
Figure 23B- 2024 PM Peak Hour Projected Queue Lengths.....	63
Figure 24A- 2024 AM Peak Hour Projected Queue Lengths.....	64
Figure 24B- 2024 PM Peak Hour Projected Queue Lengths.....	65

LIST OF TABLES

Table 1- LOS Description For Two-way Stop Intersection.....	7
Table 2- LOS Description For Signalized Intersection.....	7
Table 3- 2015 Existing Capacity and Levels of Service.....	8
Table 4- Background Capacity and Levels of Service.....	17
Table 5- Trip Generation.....	31
Table 6- Projected Capacity and Levels of Service.....	43
Table 7- Summary of Capacity and Levels of Service.....	44
Table 8- Detailed Intersection Level of Service Summary.....	66

EXECUTIVE SUMMARY

This study of The Meadows development was commissioned to determine its impact on the Town of Abingdon's current transportation system. The study of this development required the collection of traffic data, generation of anticipated traffic volumes from the proposed site, and development of future traffic volumes both from background growth and site development. Analyses for capacity and level of service of the resulting traffic projections were conducted for the site access and study intersections. Study intersections included the intersections of Cummings Street (VA Rt 75) at Cook Street, Green Springs Road, the I-81 interchange, Commerce Street, and Country Club Road. Another intersection was Main and Pecan Street, the continuation of Green Springs Road. A study of the Cummings Street corridor and the I-81 interchange is currently commissioned by VDOT addressing deficiencies and the need for increased capacity. This study is underway and findings still very preliminary but might include a northbound loop on-ramp. A realignment of Green Springs Road to Cummings Street at Cook Street is also proposed and would be constructed in conjunction with the proposed development.

The study utilized data collected for the Cummings Street corridor and the I-81 interchange study for the Virginia Department of Transportation (VDOT) in 2015. This traffic impact assessment further refined the traffic projections for the corridor and analyses to assess the site impact to the corridor and its necessary mitigation. Intersection and access improvements were identified to mitigate traffic impacts from background traffic growth and the proposed development.

The Meadows development site is located in the northeast quadrant of Exit 17 bounded by I-81 and Green Springs Road. This assessment is concurrent with a Cummings Street corridor and I-81 interchange study commissioned by VDOT in 2015. Using the turning movement data and proposed rate growth from a corridor study and the trip generation for this site, traffic was projected with and without the proposed development. Background traffic, traffic that may be anticipated regardless of the proposed development, was determined using a 3.0-percent growth for the assumed buildout year of 2018 and a 9.4 percent growth the horizon year of 2024. Traffic associated with the proposed project was then generated and distributed to the adjacent transportation system. Using the identified turning movements for the existing and projected traffic conditions, capacity and level of service analyses were conducted using the **2010 Highway Capacity Manual**.

The study estimated traffic for the proposed development with 60,000 square-foot grocery with 10 pump fuel services, 42,500 square-foot ancillary shops, four high-turnover sit-down restaurants totaling 26,000 square feet, a 2,500 square-foot assumed coffee drive-thru, and two hotels with a total of 200 rooms. From the trip generation calculations, the proposed site may generate approximately 17,380 weekday daily trips. After the consideration of pass-by and shared trips, approximately 12,690 new weekday daily trips would be generated. These trips were distributed to the transportation system based on its community size and highway oriented commercial development.

With traffic projection developed for 2018 and 2024 buildout and horizon years with and without the proposed development, analyses conducted found that the existing I-81 interchange experiences a F LOS for the northbound left-turn lane, and the spacing between northbound and southbound ramps results in adverse queuing. These conditions continue for background and projected conditions. With the proposed improvements of the interchange and the realignment of Green Springs Road with Cummings Street at Cook Street, access for the site is very good with study intersections operating at acceptable levels of service.

With the following recommendations determined from the findings of this study, The traffic generated by this site can be managed and acceptable levels of service achieved or maintained.

- Realign Green Springs Road with Cook Street at Cummings Street.
- Provide a minimum 575 foot southbound left-turn lane or 325-foot double left-turn lanes from Cummings Street to realigned Green Springs Road and the proposed site.
- Provide a minimum 350-foot northbound right-turn lane from Cummings Street to realigned Green Springs Road and the proposed site.
- Consider a 100-foot westbound left-turn lane from E. Main Street to Pecan Street and the proposed site.
- Provide a 100'foot eastbound left-turn lane from the realigned Green Springs Road to northbound Green Springs Road.
- Construct the proposed alternate interchange providing the I-81 northbound loop on-ramp and increased separation of I-81 interchange northbound and southbound ramps.
- Consider 300-foot double left-turn lanes from the realigned northbound I-81 off-ramp.
- Provide a 100'foot eastbound left-turn lane from the realigned Green Springs Road to northbound Green Springs Road.
- Minimize signing and vegetation at the proposed site accesses as not to restrict sight-distances for traffic egressing the site.

Signal and geometric improvements should meet minimum standards established by the American Association of State Transportation and Highway Officials (AASHTO), Institute of Transportation Engineers (ITE), Virginia Department of Transportation (VDOT), and Town of Abingdon.

INTRODUCTION

This traffic impact study was commissioned to address the impact and access of a proposed mixed use development in Abingdon, Virginia. The study of this development required the collection of traffic data, generation of anticipated traffic volumes from the proposed site, and development of future traffic volumes both from background growth and site development. Analyses for capacity and level of service of the resulting traffic projections were conducted for the site access and study intersections. Study intersections included the intersections of Cummings Street (VA Rt 75) at Cook Street, Green Springs Road, the I-81 interchange, Commerce Street, and Country Club Road. Another intersection was Main and Pecan Street, the continuation of Green Springs Road. The study utilized data collected for the Cummings Street corridor and the I-81 interchange for the Virginia Department of Transportation (VDOT) in 2015. This traffic impact assessment further refined the traffic projections for the corridor and analyses to assess the site impact to the corridor and its necessary mitigation. Intersection and access improvements were identified to mitigate traffic impacts from background traffic growth and the proposed development.

Proposed Site Uses

The proposed project is a mixed use development including a 131,000 square-foot shopping center, anchored by a 60,000 square-foot grocery, two hotels, four restaurants, and a fast-food or coffee drive through. **Figure 1** illustrates the site plan for the site. Primary access is from the realignment of Green Springs Road with Cook Street at Cummings Street. Another access is the intersection of Main Street (U.S. 11) and Pecan Street.

Site Location

This project is located northeast of Interstate 81 and Cummings Street (VA Rt 75), Exit 17 and is just south of the Abingdon's central business district (CBD). **Figure 2** illustrates the site relative to local and regional access.

SITE PLAN
The Meadows

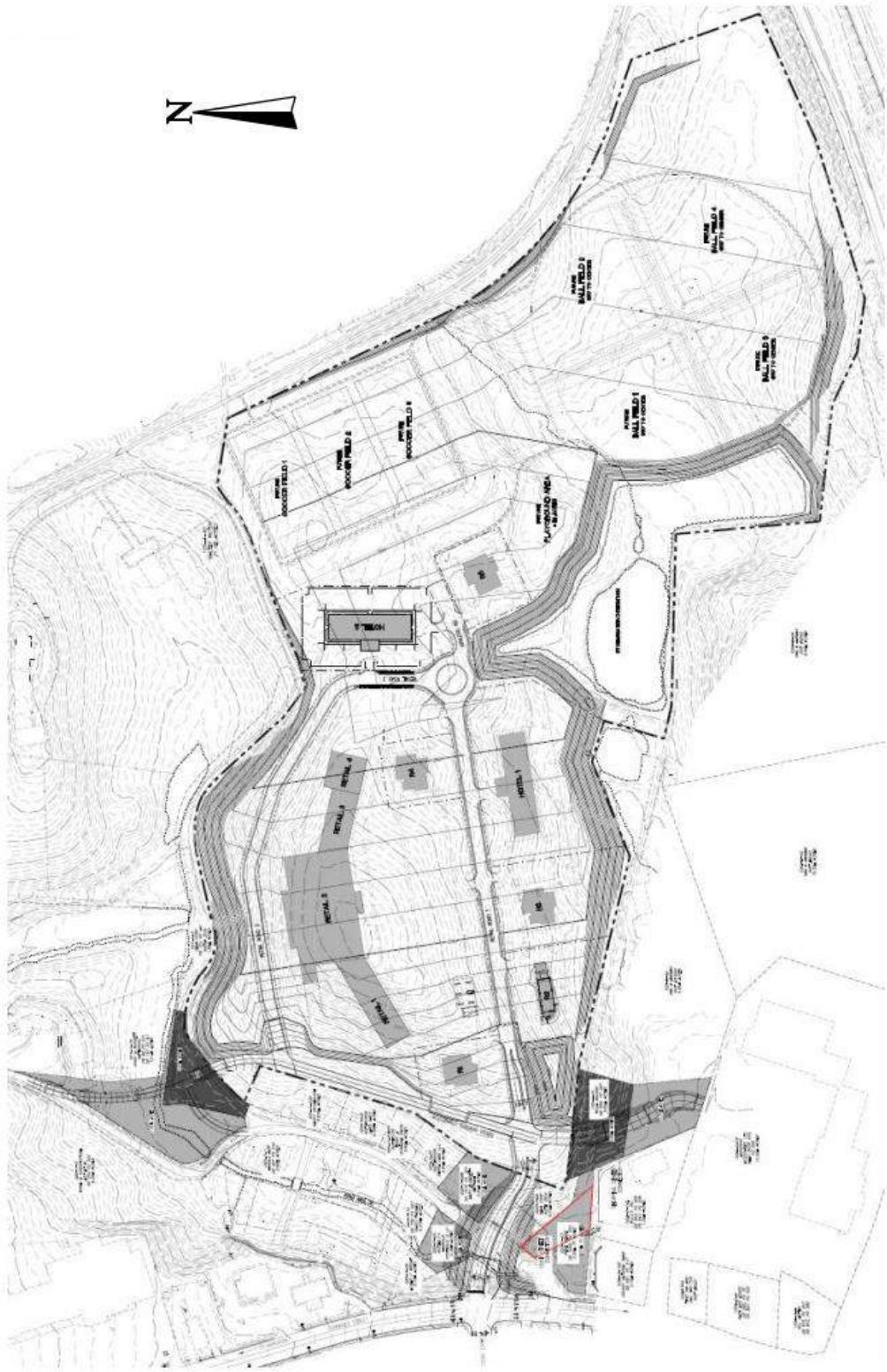
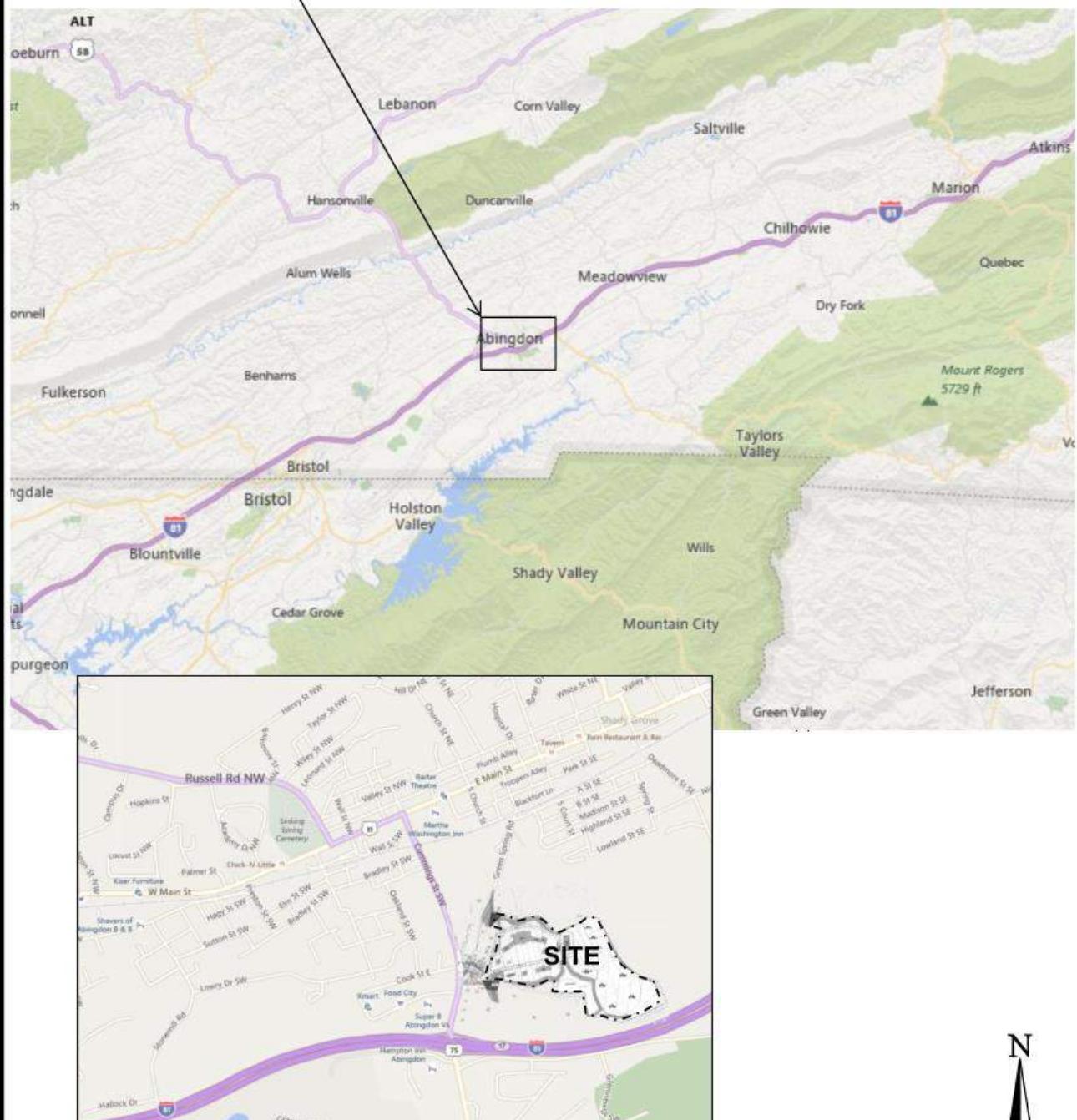


Figure 1

VICINITY MAP

The Meadows

INSERT



INSERT

Figure 2

Local Access

Local access to the site is from Cummings Street (VA Rt 75), a 5-lane section arterial street extending north to Main Street (US 11) and south to an interchange with I-81, Exit 17. The posted speed limit for Cummings Street, adjacent to the site is 35mph. Cummings Street has an estimated 2015 average daily traffic volume of 17,850. The development of the site will include the realignment of Green Springs Road with Cook Street at Cummings Street. Green Springs Road currently connects from Cummings Street south of Cook Street and extends north becoming Pecan Street and intersecting Main Street.

Regional Access

Regional access is from I-81 and Lee Highway (US 11), Main Street. Lee Highway extends northeast and southwest north of the site, through Virginia between Bristol and Winchester. Lee Highway has an average daily traffic (ADT) volume of approximately 10,800. Interstate 81, south of the site, provides access between I-40 above Knoxville, Tennessee, and the northeastern United States.

Pedestrian and Bicycle Facilities

Adjacent to the site is the Virginia Creeper Trail extending from Abingdon to White Top though Damascus. Parking for the trail is from Green Springs Road near Pecan Street.

Planned Improvements

A study of the Cummings Street corridor and the I-81 interchange is currently commissioned by VDOT addressing deficiencies and the need for increased capacity. This study is underway and finding still very preliminary but might include a northbound loop on-ramp. A realignment of Green Springs Road to Cummings Street at Cook Street is also proposed and would be constructed in conjunction with the proposed development.

ANALYSIS OF EXISITING TRAFFIC CONDITIONS

Existing Traffic Volumes and Intersection Geometry

Weekday peak-hour turning movement counts (TMC) were conducted during 2015 for Cummings Street intersections with Cook Street, Green Springs Road, I-81 interchange, Commerce Street, and Country Club Road. These counts were conducted for the Cummings Street corridor and I-81 study commissioned by VDOT and shared with CDM Smith for the purpose of conducting this impact assessment. The Town of Abingdon conducted the turning movement count for the intersection of Main Street and Pecan Street November of 2015. **Figure 3** illustrates the peak hour intersection turning movement volumes. Cummings Street is a 5-lane facility with traffic signals at the I-81 ramps and Cook Street. Commerce Street and Country Club Road are STOP controlled approaches. Main Street is a 2-lane arterial with Pecan Street intersection signalized.

Existing Capacity and Level of Service

In order to evaluate the current operations of the traffic control devices, capacity and level of service were calculated using the **2010 Highway Capacity Manual, Special Report 209** published by the Transportation Research Board (TRB). Signalized and unsignalized intersections are evaluated based on estimated intersection delays, which may be related to level of service (LOS).

Level of service and capacity are the measurements of an intersection's ability to accommodate traffic volumes. Levels of service for intersections range from LOS A to LOS F. LOS A is the best. LOS F is failing. For signalized intersections, LOS A has an average estimated intersection delay of less than 10 seconds, and LOS F has an estimated delay of greater than 80 seconds. LOS C and D are typical design values. Within urban areas, a LOS D having delay between 35 and 55 seconds is considered acceptable by the Institute of Transportation Engineers (ITE) for signalized intersections.

Unsignalized intersection levels of service have lower thresholds of delays. LOS F exceeds estimated delays of 50 seconds. For urban arterials, minor approaches may frequently experience levels of service E. A full level of service description for unsignalized and signalized intersections is presented in **Tables 1 and 2**, respectively.

2015 EXISTING PEAK-HOUR TRAFFIC

The Meadows

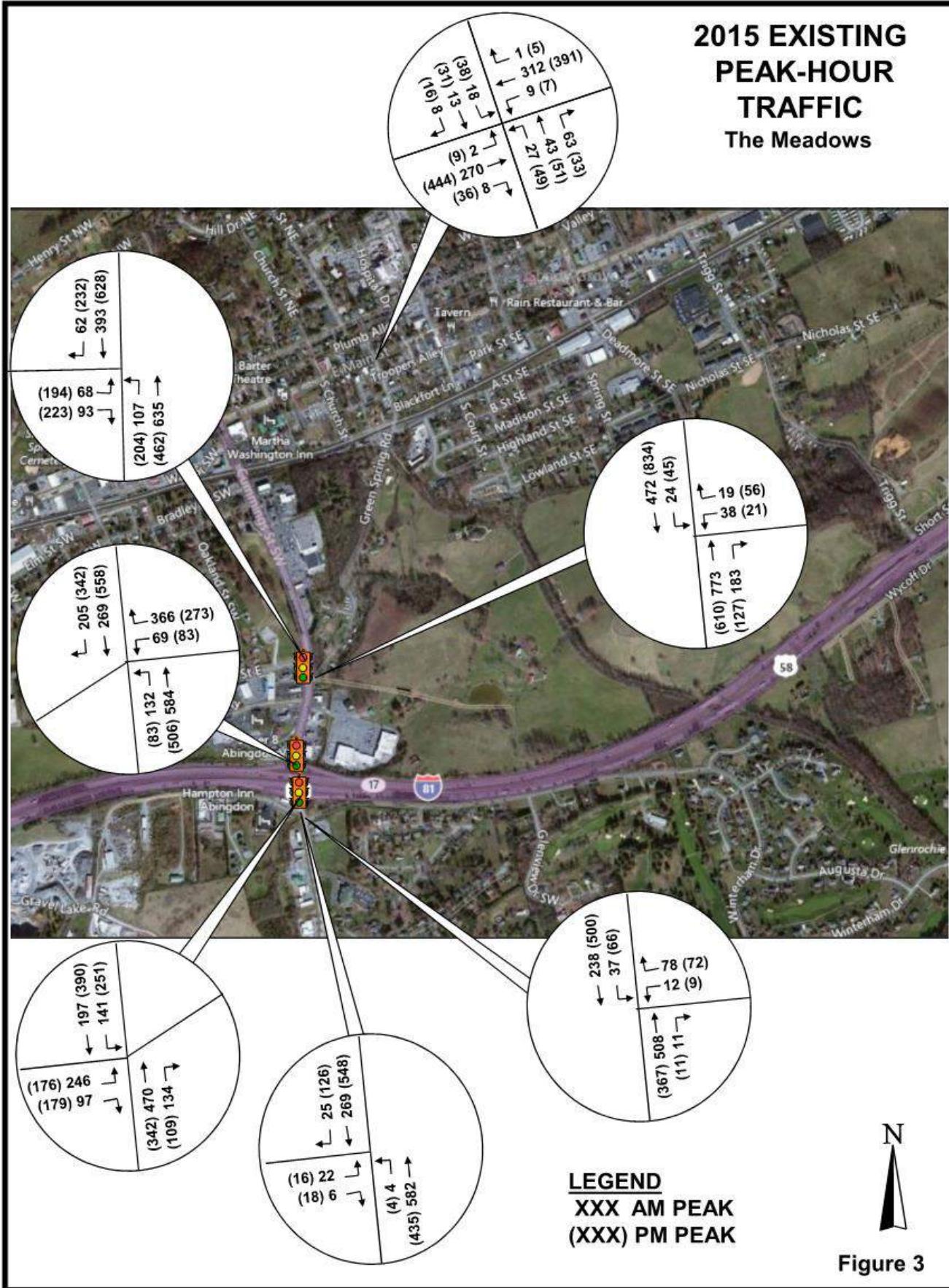


Figure 3

Table 1
LEVEL-OF-SERVICE (LOS) DESCRIPTION
FOR TWO-WAY STOP INTERSECTIONS

Level of Service	Average Control Delay per Vehicle (seconds)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

SOURCE: Highway Capacity Manual, TRB Special Report 209

Table 2
LEVEL-OF-SERVICE (LOS) DESCRIPTION
FOR SIGNALIZED INTERSECTIONS

LOS	Average Control Delay per Vehicle (seconds)	Description
A	≤ 10.0	Very low delay with extremely favorable progression. Most vehicles don't stop.
B	> 10.0 and ≤ 20.0	Generally good progression. Increase number of stops from that described for LOS "A" resulting in higher delays
C	> 20.0 and ≤ 35.0	Fair progression with increased delay. Number of stopping vehicles become significant; however, many still pass through the intersection without stopping. Stable flow.
D	> 35.0 and ≤ 55.0	The influence of congestion becomes more noticeable. Longer delays resulting from unfavorable progression, longer cycles, or high V/C ratios. Approaching unstable flow.
E	> 55.0 and ≤ 80.0	Limit of acceptable delay. Long delays associated with poor progression, long cycles, or high V/C ratios.
F	> 80.0	Unacceptable operation resulting from oversaturation (flow rates exceed capacity). Poor progression, long cycles, and high V/C ratios.

SOURCE: Highway Capacity Manual, TRB Special Report 209

Analyses of existing conditions are conducted using the Synchro Software, developed by Trafficware. Capacity and LOS analyses assume optimized signal timing developed by Synchro. **Table 3** presents the analyses of the study intersections. **Figure 4A and B** illustrate the existing traffic control and geometry and LOS. The study intersections currently operate at acceptable levels of service during the weekday peak hours. However the northbound I-81 off-ramp fails and the distance between interstate ramps limits the interchange operation and efficiency. Left-turning traffic to the interstate may spill out of the available storage. Northbound queues south of the I-81 interchange may also impede the access from Commerce Street and Country Club during peak hours. Queues were determined using SimTraffic, a traffic simulation model, and are illustrated in **Figures 5A and B** for the existing traffic conditions.

Table 3
2015 EXISTING
CAPACITIES AND LEVELS OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Cummings Street at Cook Street	SIGNAL	AM	0.36	7.4	A
		PM	0.63	12.4	B
Cummings Street at Green Springs Road	STOP WB/SBL	AM	0.15 / 0.04	14.9 / 1.8	B / A
		PM	0.16 / 0.06	13.1 / 2.0	B / A
Cummings Street at I-81 SB Ramps	SIGNAL	AM	0.57	32.0	C
		PM	0.55	30.7	C
Cummings Street at I-81 NB Ramps	SIGNAL	AM	0.66	38.3	D
		PM	0.62	27.7	C
Cummings Street at Commerce Street	STOP EBL/EBR	AM	0.08 / 0.01	18.8 / 9.7	C / A
		PM	0.08 / 0.04	22.7 / 12.1	C / B
Cummings Street at Country Club Drive	STOP WBL/WBR	AM	0.04 / 0.16	17.8 / 13.1	C / B
		PM	0.05 / 0.12	23.3 / 11.3	C / B
E. Main Street at Pecan Street	SIGNAL	AM	0.36	6.7	A
		PM	0.49	7.2	A

Note: Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

2015 AM PEAK HOUR EXISTING LOS AND GEOMETRY

The Meadows

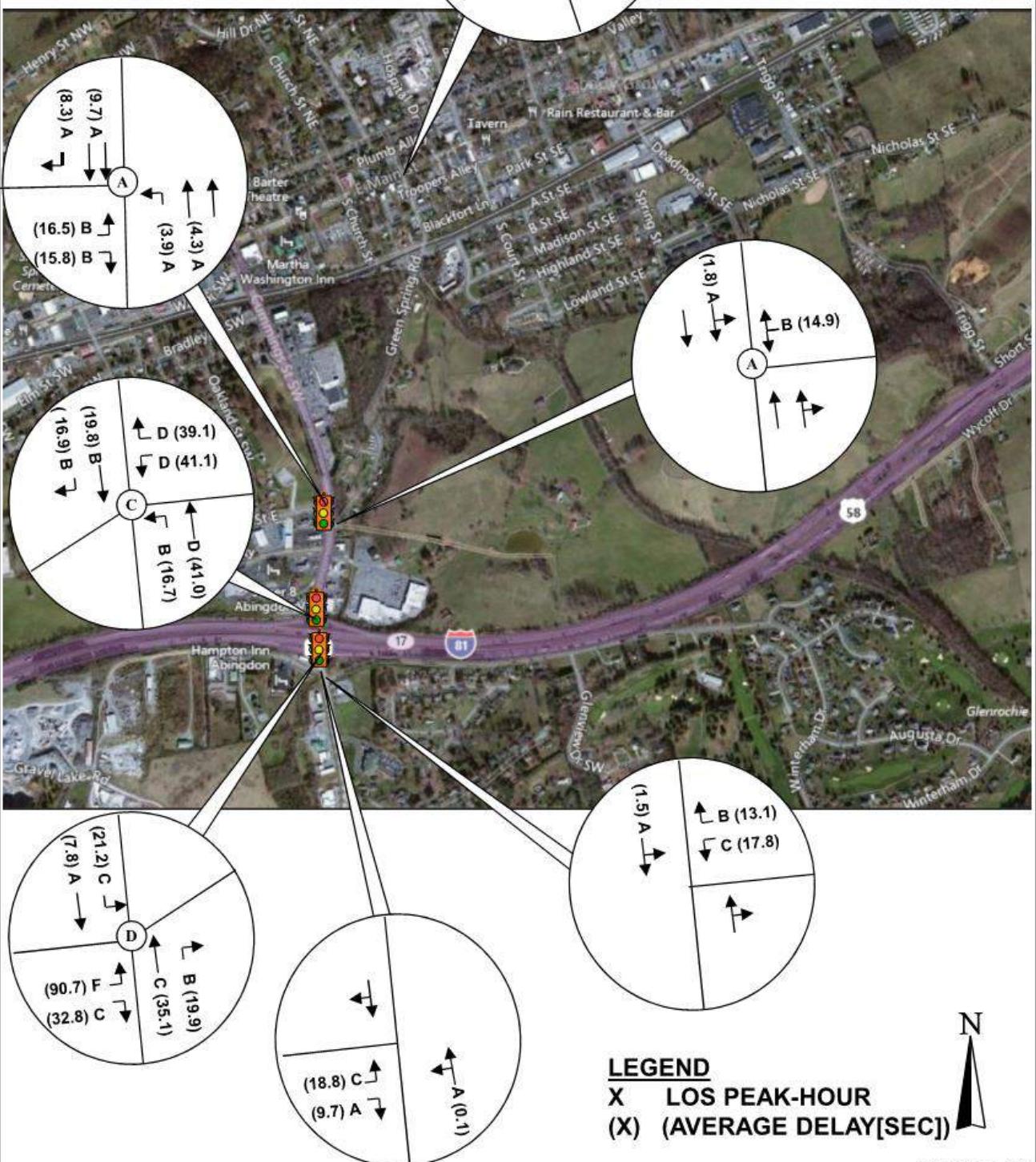


Figure 4A

**2015 PM PEAK HOUR
EXISTING LOS
AND GEOMETRY**
The Meadows

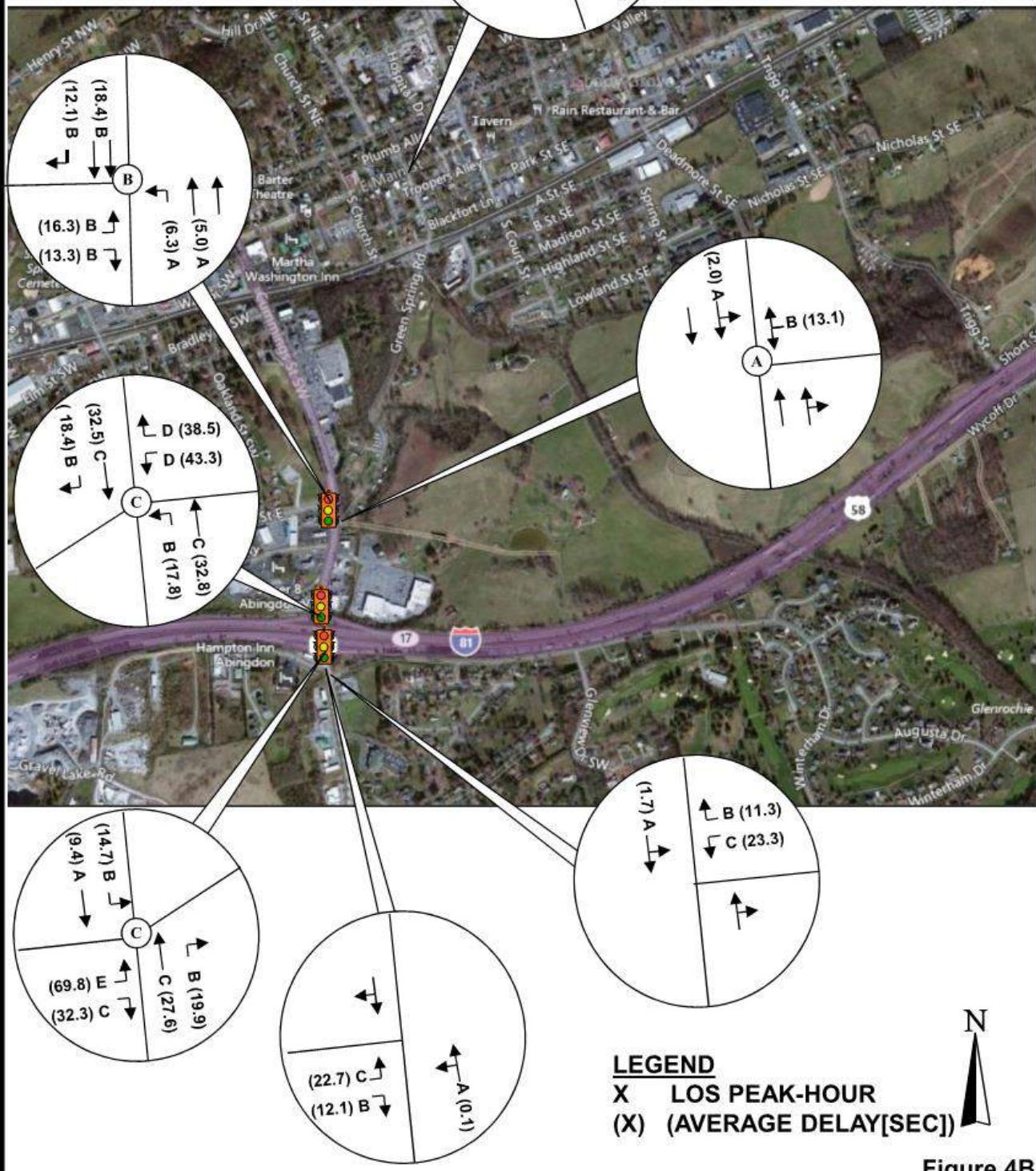


Figure 4B

2015 AM PEAK HOUR EXISTING NETWORK QUEUE LENGTHS

The Meadows

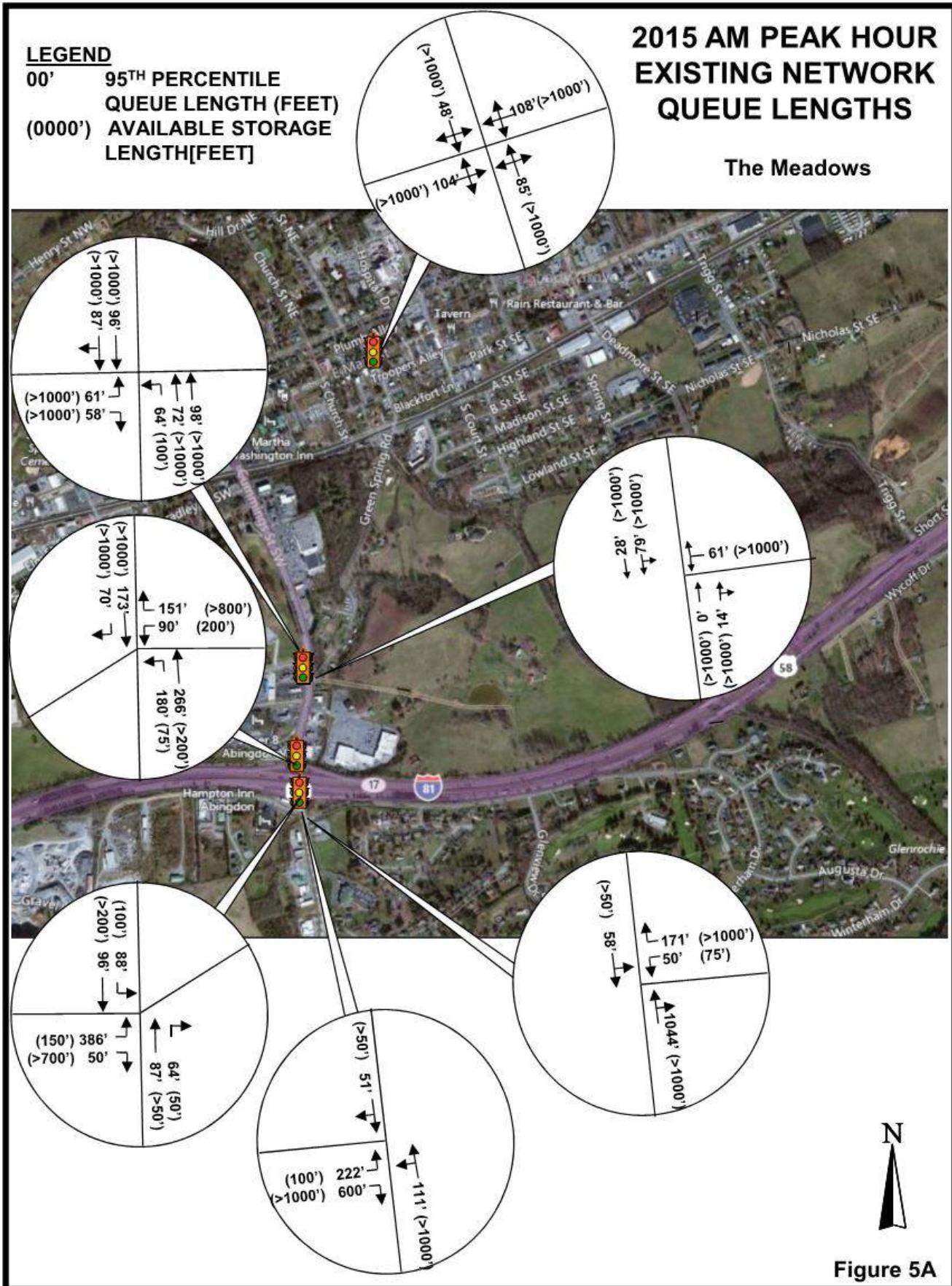


Figure 5A

2015 PM PEAK HOUR EXISTING NETWORK QUEUE LENGTHS

The Meadows

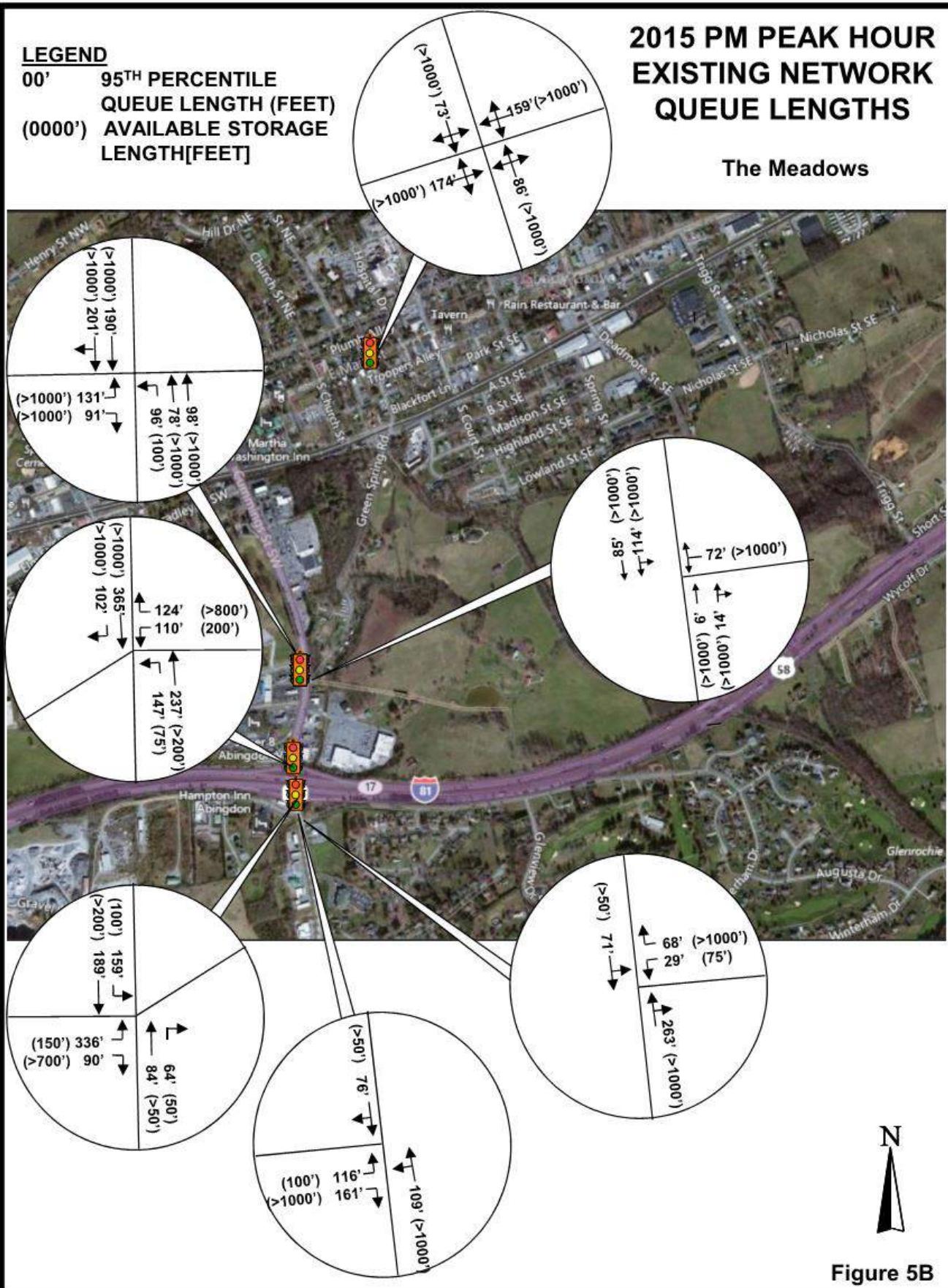


Figure 5B

ANALYSIS OF FUTURE CONDITIONS WITHOUT DEVELOPMENT

Future traffic conditions or background conditions are the anticipated conditions regardless of the proposed development. Traffic through the study area should continue to grow as the region develops. In addition, background traffic should address any known or planned developments in the vicinity of the proposed development.

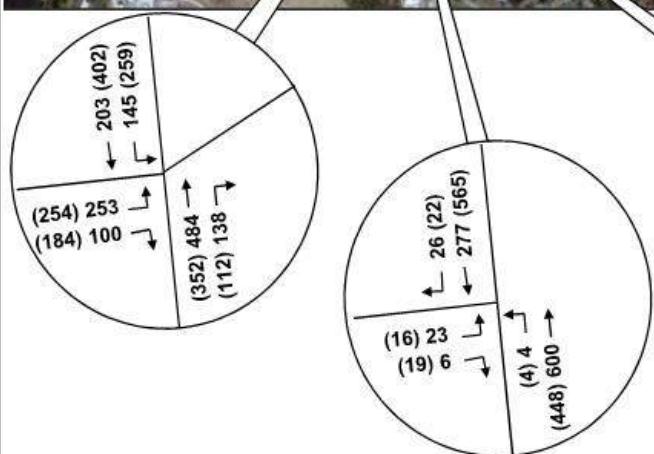
Background Traffic Volumes

The corridor study conducted for VDOT used a growth rate of 1.0-percent for the Cummings Street corridor. Therefore, for the purpose of this study, the same 1.0 –percent rate of growth was applied annually and compounded. Traffic was grown for the proposed buildout year of 2018 and a 2024 horizon year. Completion of the development will largely depend on economic and market conditions. Background traffic is, therefore, developed for horizon years 2018 and 2024 assuming a 3.0- and 9.4-percent growth to the existing traffic volumes, respectively. The proposed development will also contribute to the growth of the corridor. Buildout year 2018 and horizon year 2024 background traffic are illustrated in **Figure 6 and 7A**, respectively.

In addition to the background traffic volumes, background conditions reflect the proposed improvements including the realignment of Green Springs Road intersection with Cummings at Cook Street and the I-81 interchange. With the current planning and engineering for the I-81 interchange and the Cummings Street corridor, a northbound loop on-ramp is an alternative improving separation between ramps with the realignment of the northbound off-ramp with County Club Drive and removing the left-turn signal phase for the northbound I-81 traffic providing free flow movements to I-81 northbound. This alternative significantly improves the capacity of the interchange. **Figure 7B** illustrates the reassigned 2024 background traffic for the proposed interchange alternative.

2018 BACKGROUND PEAK-HOUR TRAFFIC

The Meadows



LEGEND
XXX AM PEAK
(XXX) PM PEAK



Figure 6

2024 BACKGROUND PEAK-HOUR TRAFFIC

The Meadows

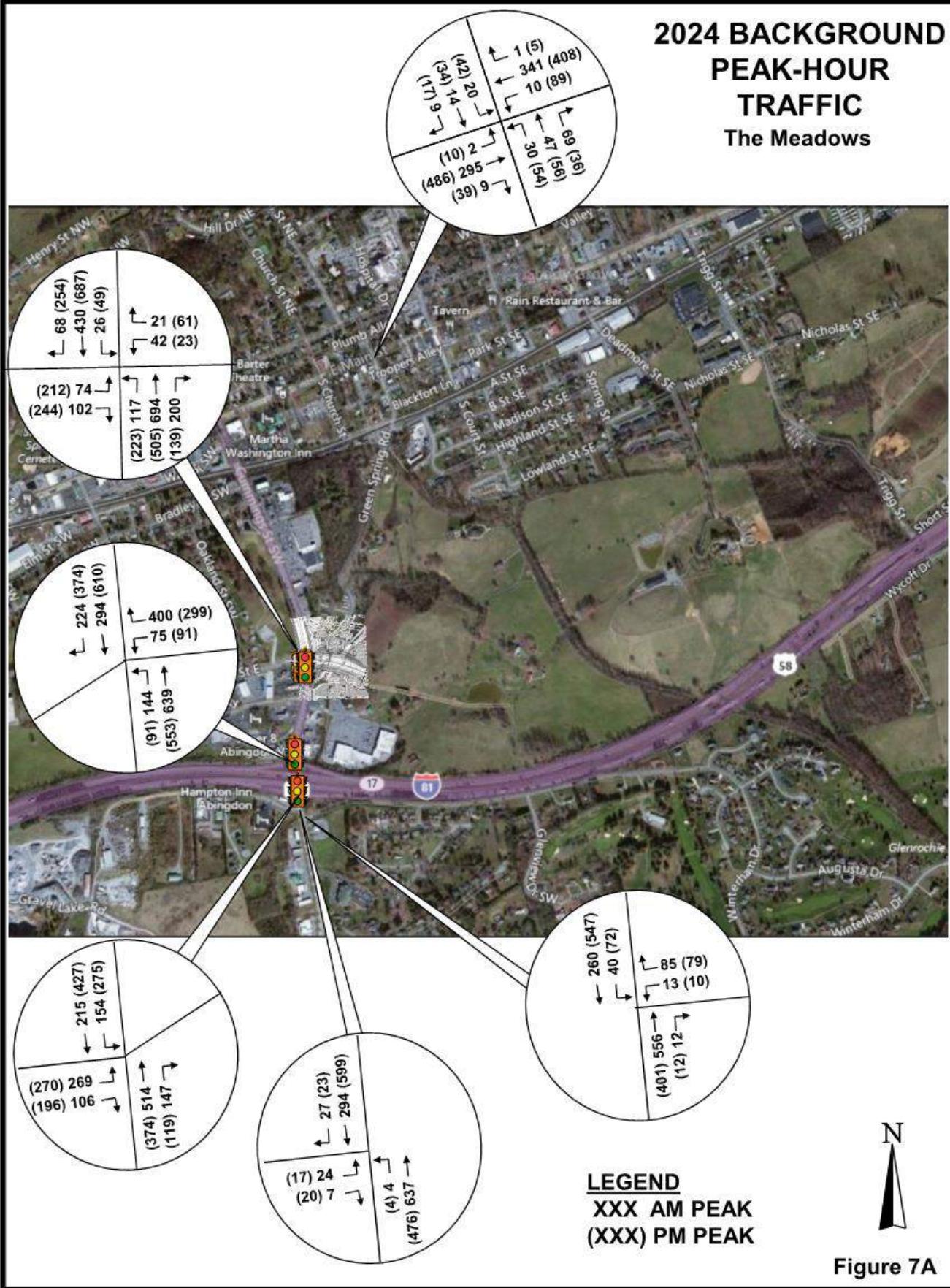


Figure 7A

2024 BACKGROUND PEAK-HOUR TRAFFIC

The Meadows

With Interchange Modification



LEGEND
XXX AM PEAK
(XXX) PM PEAK



Figure 7B

Background Capacity and Level of Service

The study intersections with Cummings Street are again analyzed for capacity and level of service. **Table 4** presents the background analyses of the study intersections. **Figures 8A and 8B** illustrate the peak hour analyses for the 2018 buildout year and **Figures 9A-D** illustrate the 2024 peak hour analyses. Background traffic conditions remain acceptable though the northbound I-81 off-ramp will continue to operate at the LOS F as identified for the existing traffic condition. Spacing of the interstate ramps distance continues to impede the efficient interchange operation. **Figures 10A and B and 11A-D** illustrate the resulting queues for the 2018 and 2024 study intersections, respectively.

Table 4
BACKGROUND
CAPACITIES AND LEVELS OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2018			2024		
			V/C	DELAY	LOS	V/C	DELAY	LOS
Cummings Street at Cook Street/Green Springs Road	SIGNAL	AM PM	0.33 0.61	13.6 23.3	B C	0.33 0.65	14.5 24.9	B C
Mitigation Proposed Interchange	SIGNAL	AM PM				0.37 0.75	13.6 21.9	B C
Cummings Street at I-81 SB Ramps	SIGNAL	AM PM	0.58 0.51	25.6 28.2	C C	0.57 0.57	28.9 29.4	C C
Mitigation Proposed Interchange	SIGNAL	AM PM				0.72 0.60	17.1 13.4	B B
Cummings Street at I-81 NB Ramps	SIGNAL	AM PM	0.63 0.58	31.1 26.0	C C	0.63 0.65	34.1 27.1	C C
Mitigation Proposed Interchange: Realignment with Country Club						0.71 0.68	22.2 18.9	C B
Cummings Street at Commerce Street	STOP EBL/EBR	AM PM	0.09 / 0.01 8.00 / 0.04	19.6 / 9.8 23.7 / 12.4	C / A C / B	0.10 / 0.01 0.10 / 0.05	21.1 / 9.9 26.5 / 12.8	C / A D / B
Cummings Street at Country Club Drive	STOP WBL/WBR	AM PM	0.05 / 0.17 0.05 / 0.13	18.3 / 13.3 24.4 / 11.5	C / B C / B	0.05 / 0.19 0.06 / 0.14	19.7 / 13.9 27.4 / 11.8	C / B D / B
Mitigation Proposed Interchange: Realignment with I-81NB Off-Ramp	SIGNAL	AM PM				0.71 0.68	22.2 18.9	C B
E. Main Street at Pecan Street	SIGNAL	AM PM	0.38 0.51	6.9 7.7	A A	0.41 0.54	7.1 8.0	A A

Note: Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

With the realignment of Green Springs Road intersection with Cummings Road at Cook Street, the resulting intersection will provide for a good level of service. The proposed improvements of the interchange, relocating the northbound off-ramp with Country Club and providing for a loop on-ramp and free flow movements to northbound I-81, also results in very good levels of service.

2018 AM PEAK HOUR BACKGROUND LOS AND GEOMETRY

The Meadows

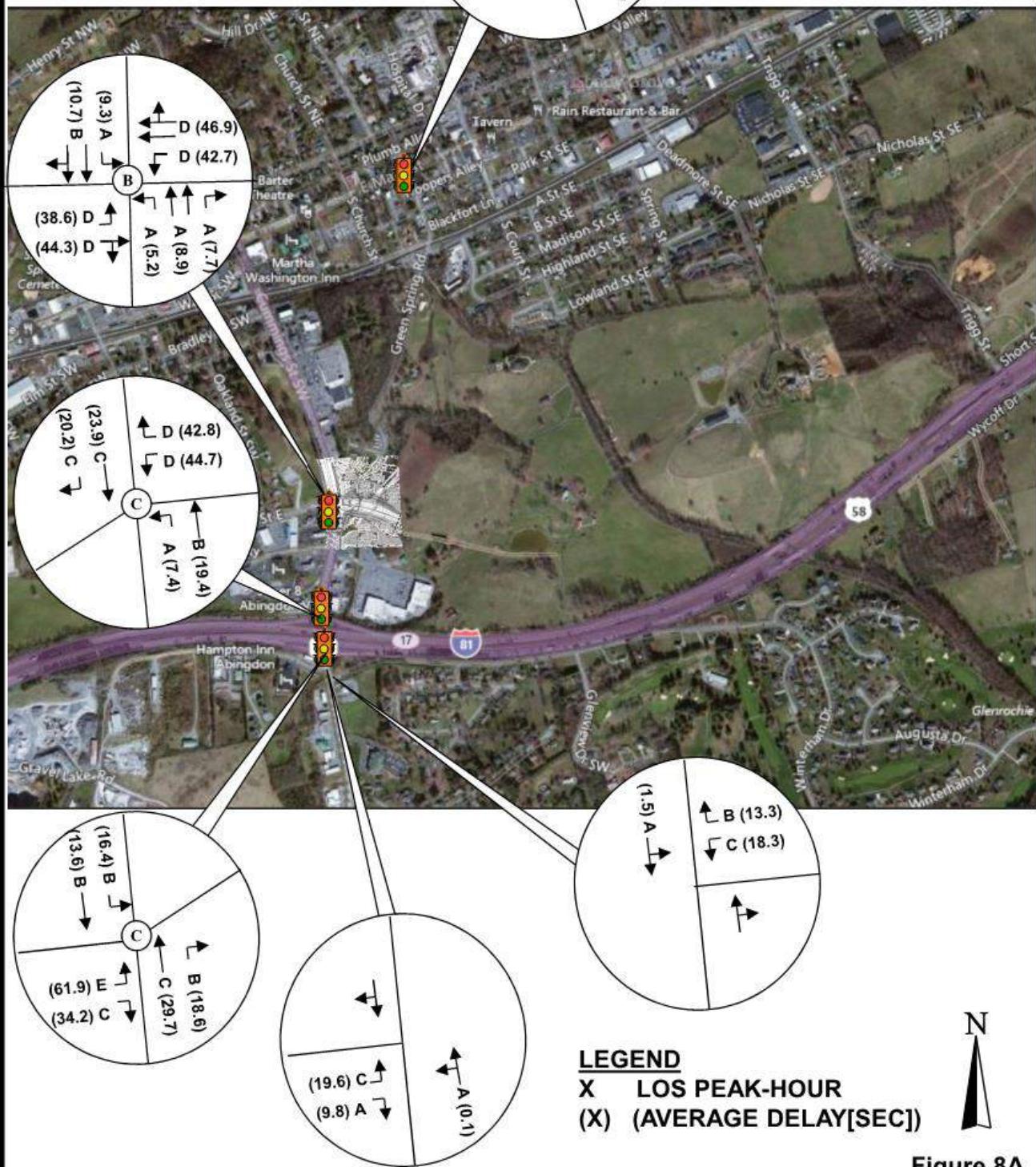


Figure 8A

2018 PM PEAK HOUR BACKGROUND LOS AND GEOMETRY

The Meadows

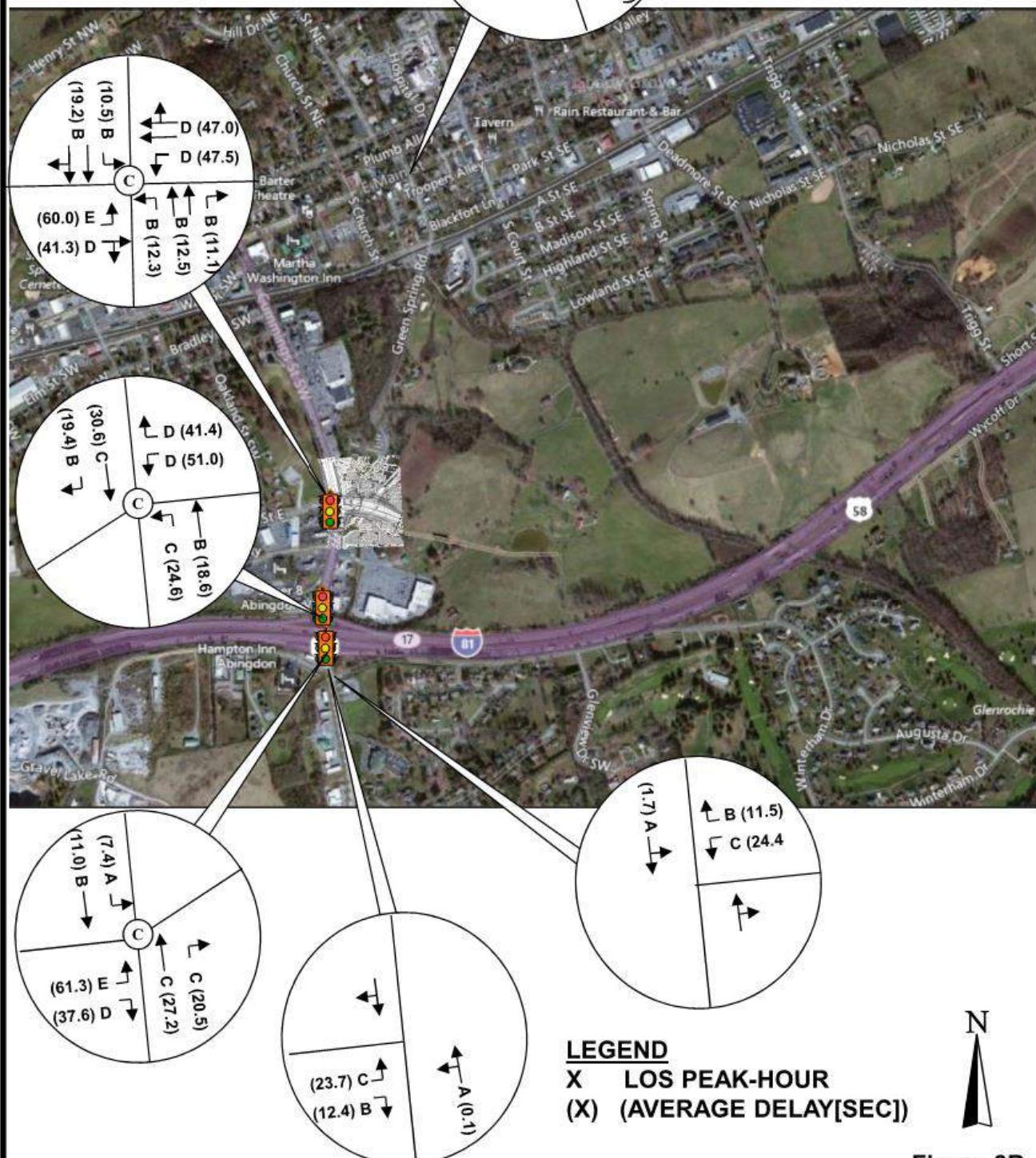


Figure 8B

2024 AM PEAK HOUR BACKGROUND LOS AND GEOMETRY

The Meadows

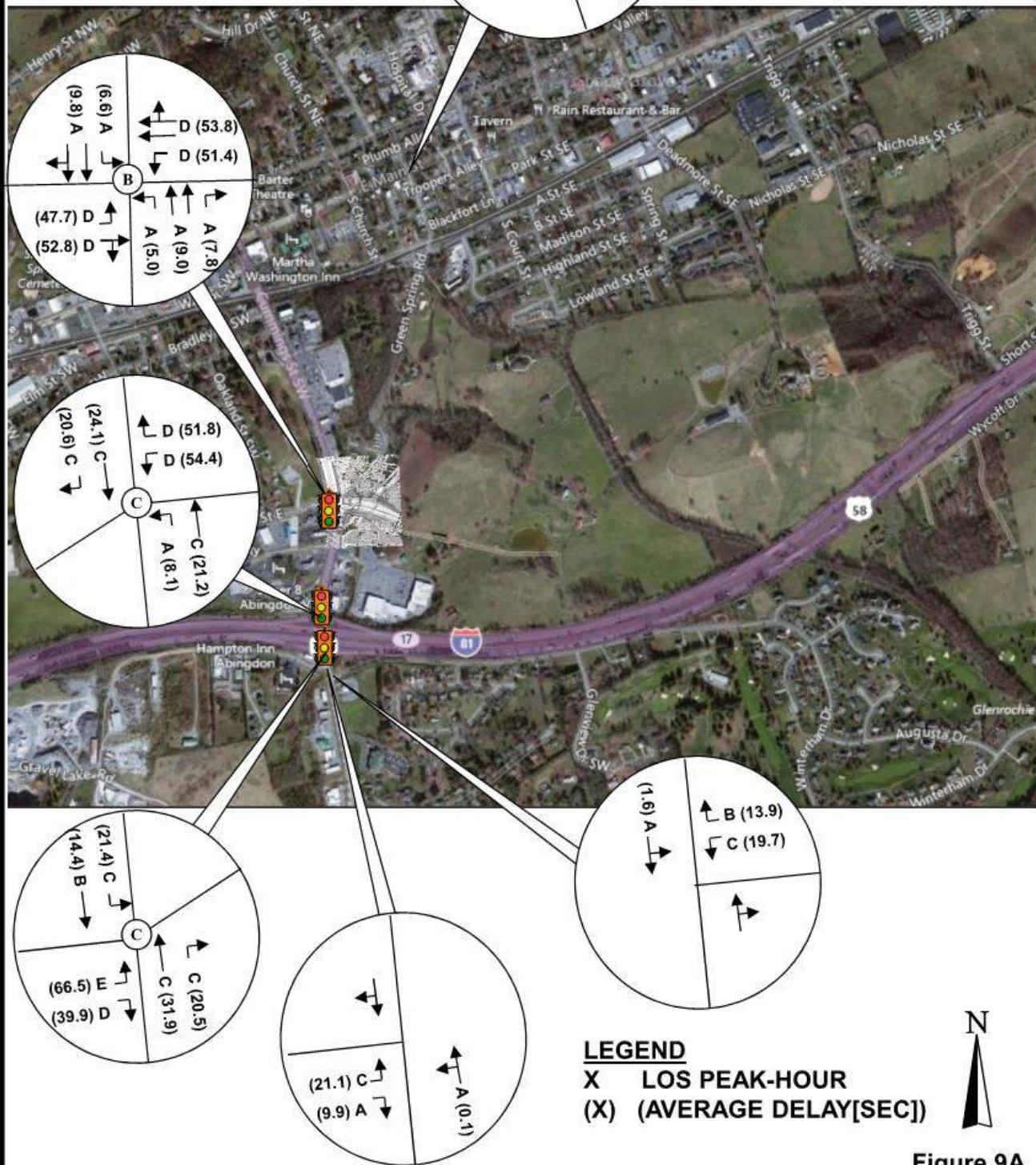


Figure 9A

2024 PM PEAK HOUR BACKGROUND LOS AND GEOMETRY

The Meadows

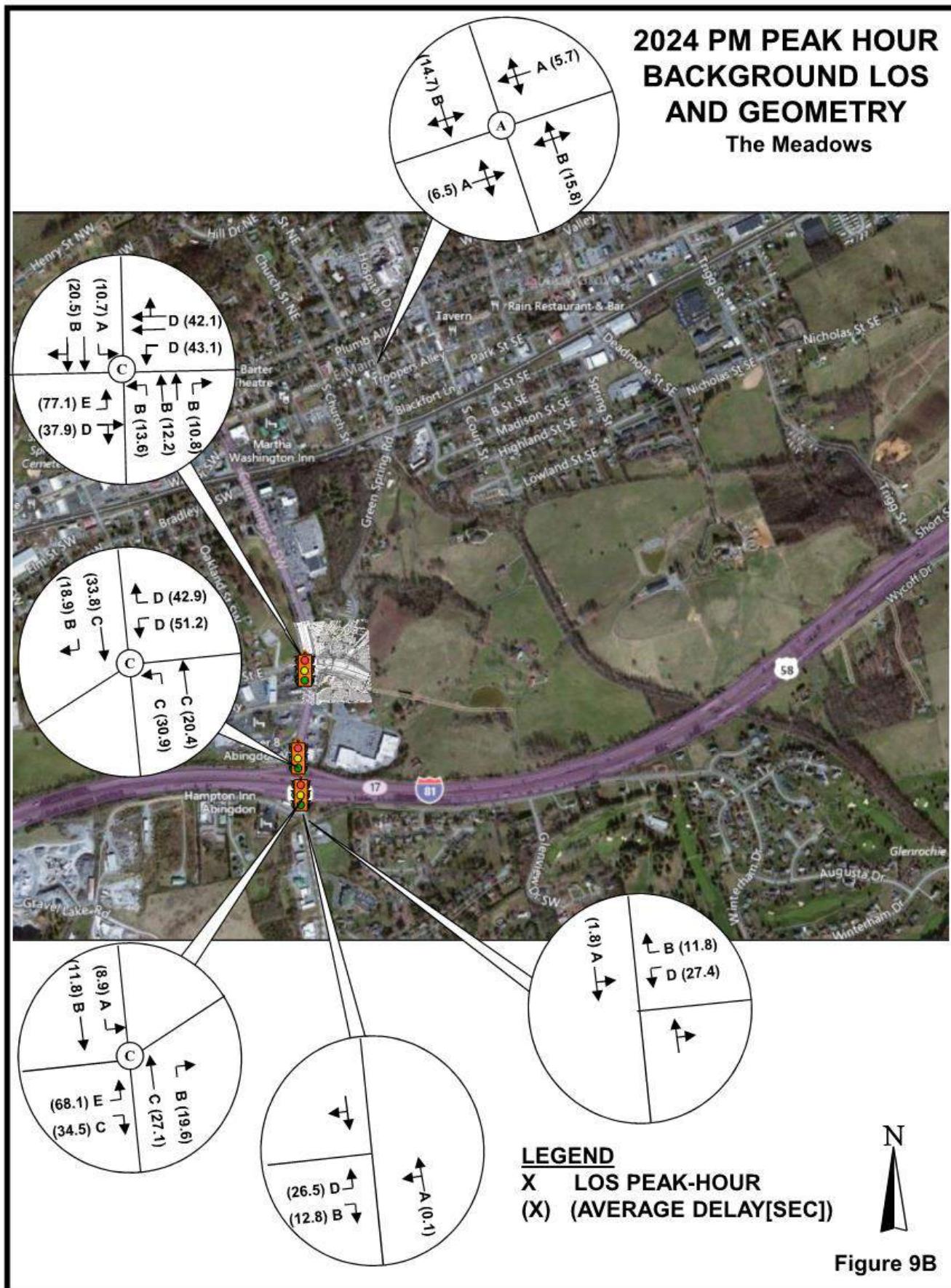
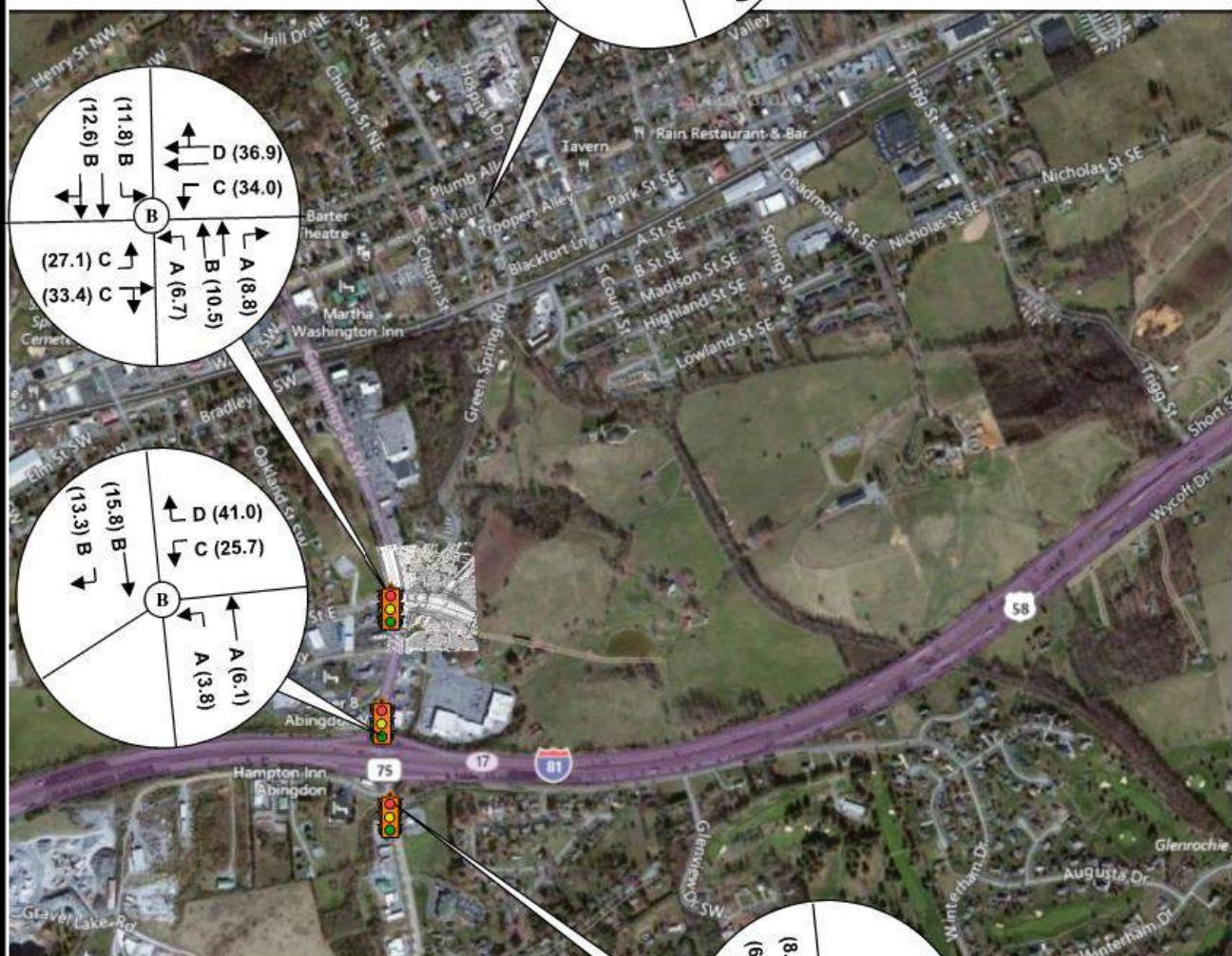


Figure 9B

2024 AM PEAK HOUR BACKGROUND LOS AND GEOMETRY

The Meadows

With Interchange Modification



LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



Figure 9C

2024 PM PEAK HOUR BACKGROUND LOS AND GEOMETRY

The Meadows

With Interchange Modification



LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



Figure 9D

2018 AM PEAK HOUR BACKGROUND NETWORK QUEUE LENGTHS

The Meadows

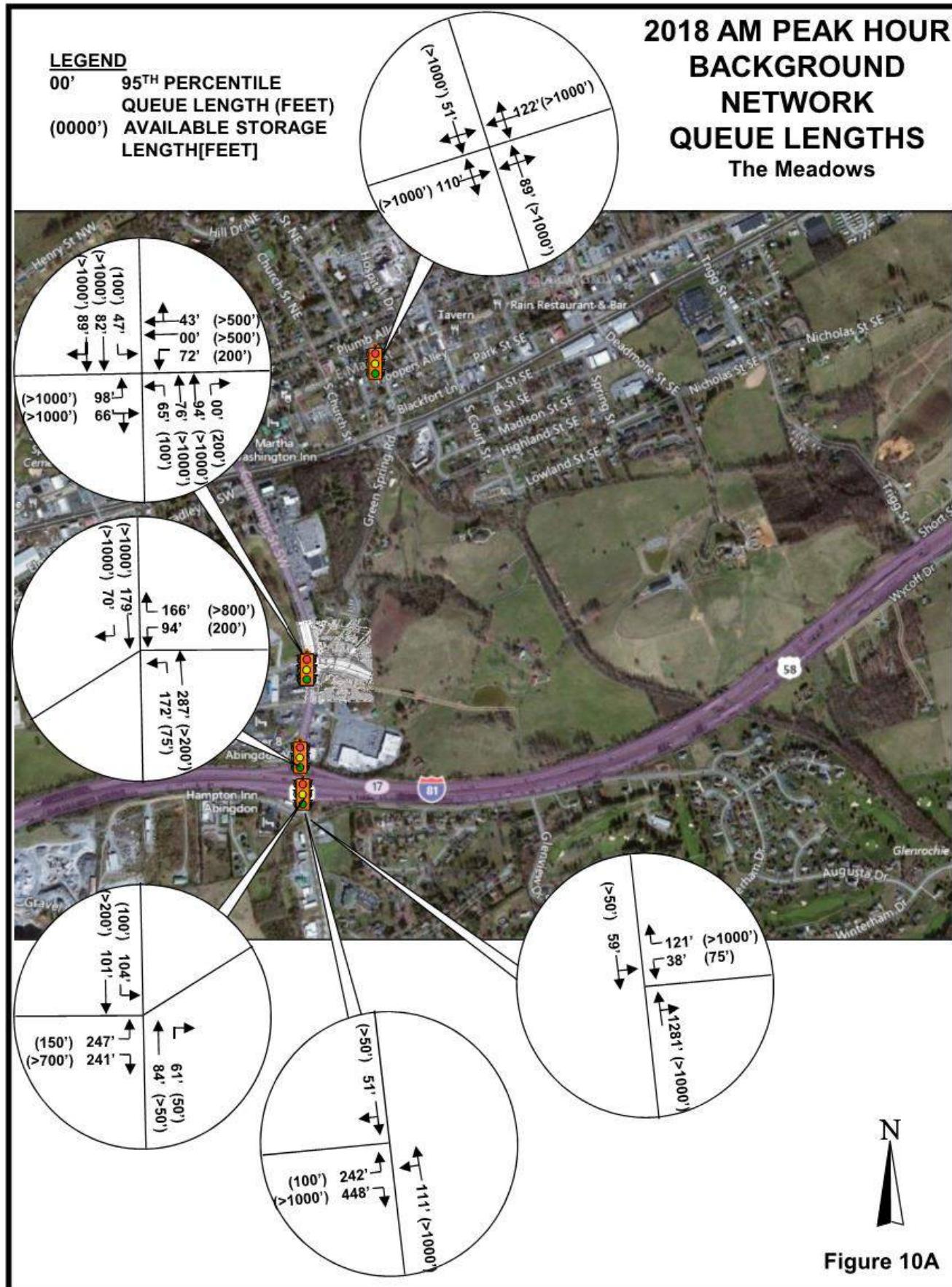


Figure 10A

2018 PM PEAK HOUR BACKGROUND NETWORK QUEUE LENGTHS

The Meadows

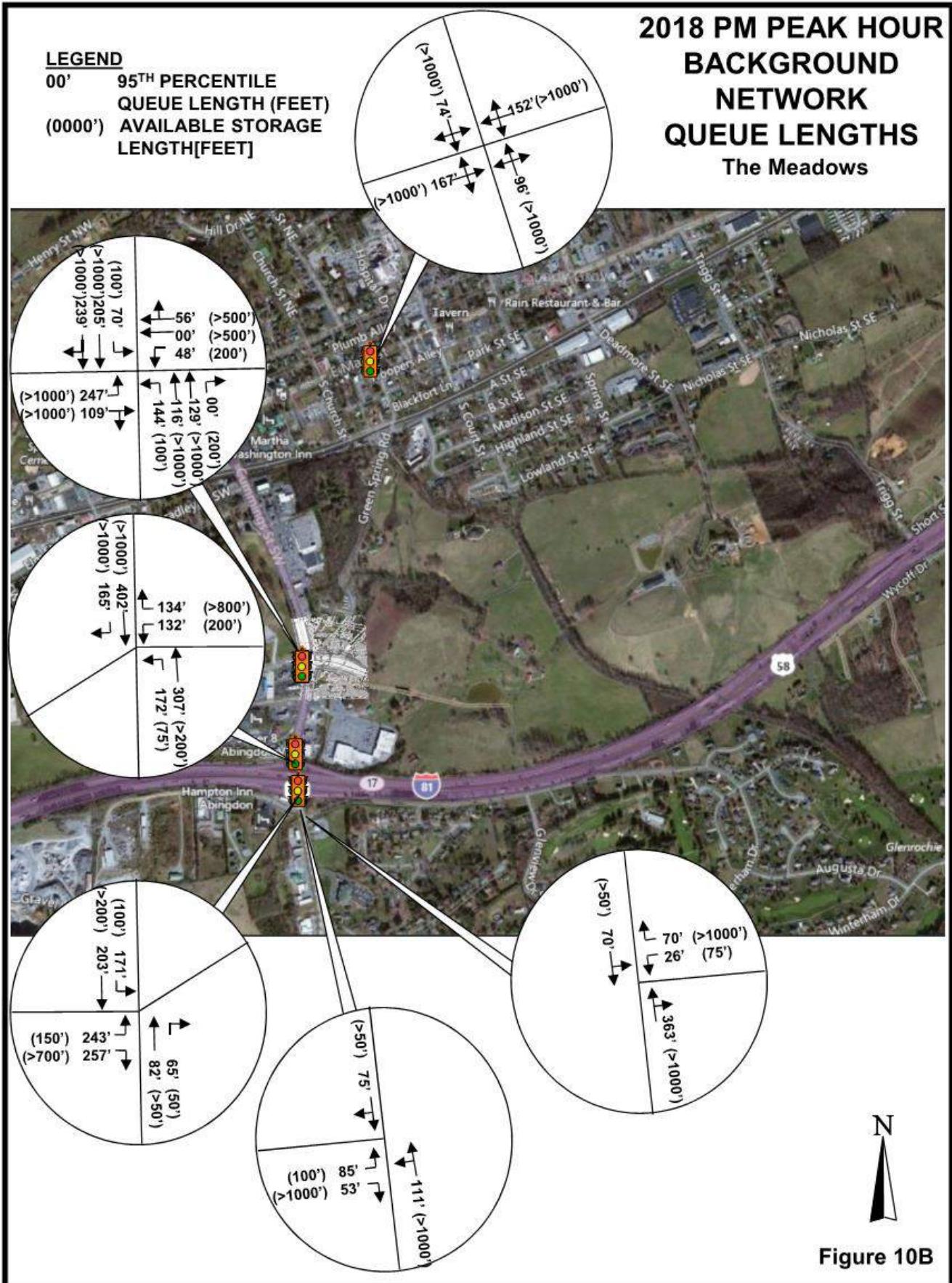


Figure 10B

**2024 AM PEAK HOUR
BACKGROUND
NETWORK
QUEUE LENGTHS**
The Meadows

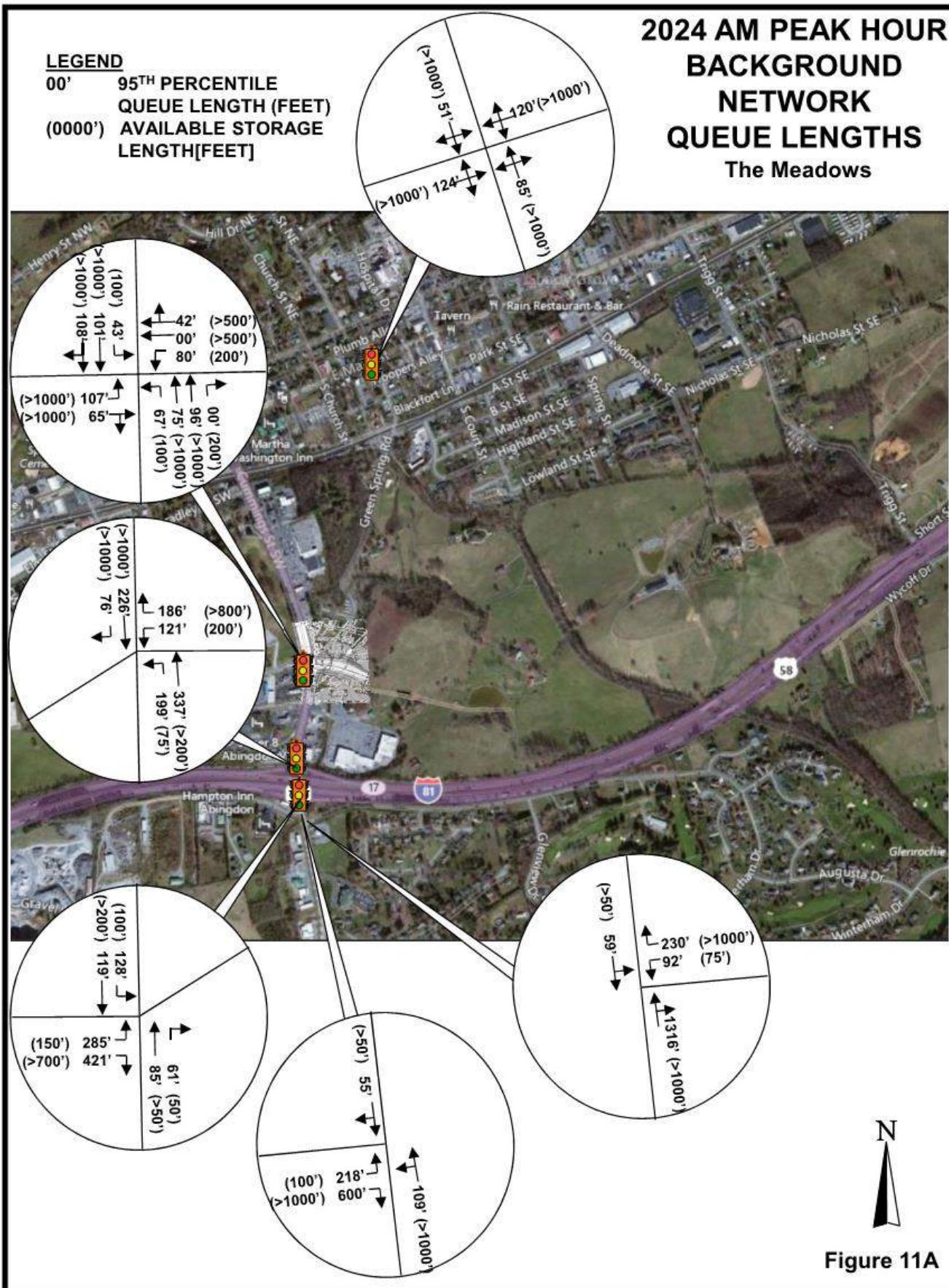


Figure 11A

2024 PM PEAK HOUR BACKGROUND NETWORK QUEUE LENGTHS

The Meadows

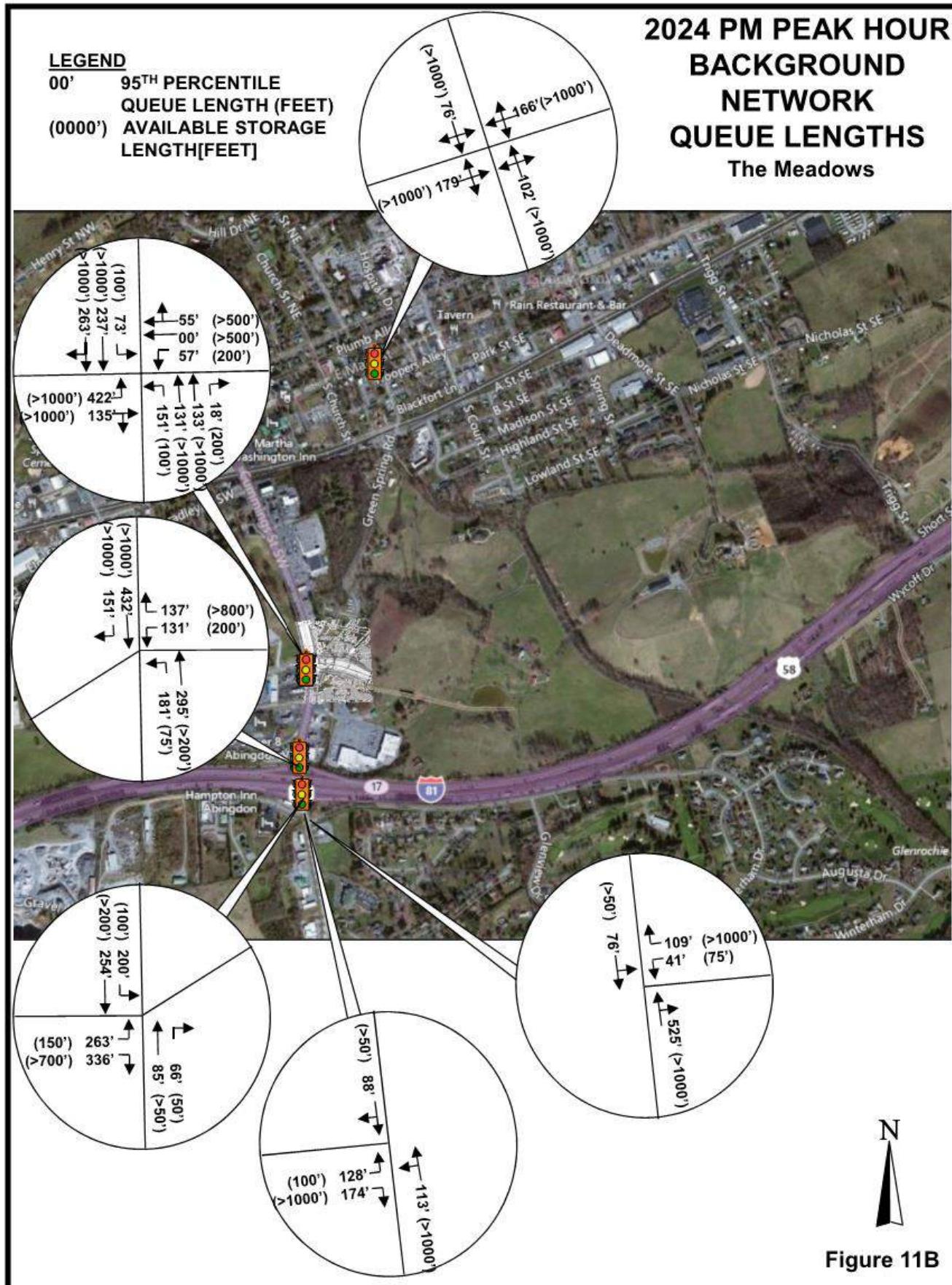


Figure 11B

2024 AM PEAK HOUR BACKGROUND NETWORK QUEUE LENGTHS

The Meadows With Interchange Modification

LEGEND

00' 95TH PERCENTILE
QUEUE LENGTH (FEET)
(0000') AVAILABLE STORAGE
LENGTH[FEET]



Figure 11C

**2024 PM PEAK HOUR
BACKGROUND
NETWORK
QUEUE LENGTHS**
The Meadows
With Interchange Modification

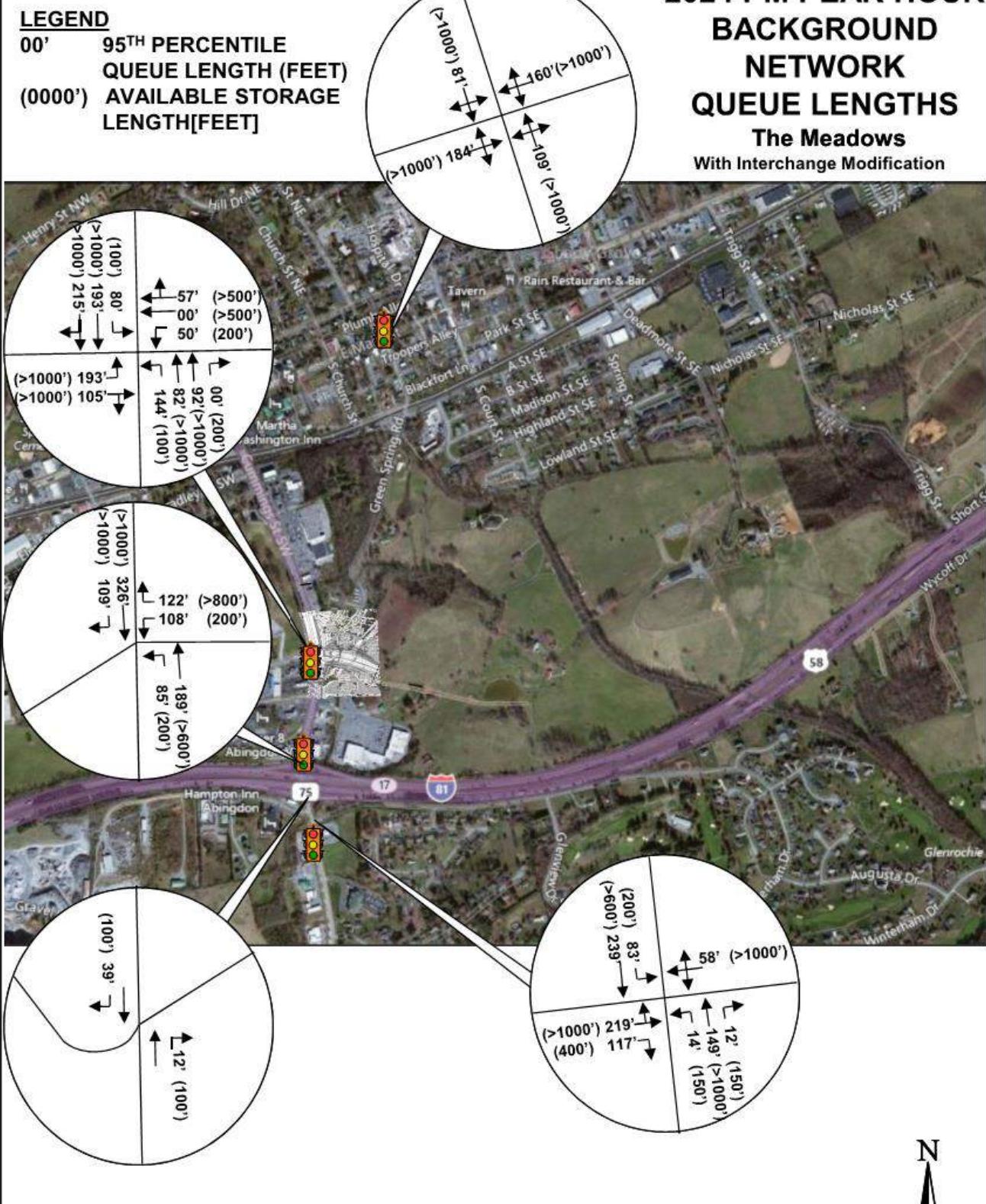


Figure 11D

PROPOSED PROJECT

Trip Generation

Project traffic was estimated using the data and methodologies of the publication, **Trip Generation, 9th Edition**. This reference is published by the Institute of Transportation Engineers (ITE) and represents national data collected for many different land uses including industrial, residential and commercial uses. It is an essential tool in estimating the volume of traffic likely to be generated by a proposed development.

The study estimated traffic for the proposed development with 60,000 square-foot grocery with 10 pump fuel services, 42,500 square-foot ancillary shops, four high-turnover sit-down restaurants totaling 26,000 square feet, a 2,500 square-foot assumed coffee drive-thru, and two hotels with a total of 200 rooms. Trip generation used peak-hour of the adjacent street regression equations unless unavailable, at which average rates were then utilized.

Some trip generation studies have included surveys addressing pass-by traffic. This is traffic already on the adjacent street that is attracted to the proposed development. Studies conducted for pass-by traffic suggest that a percentage of the trips generated by commercial retail, such as the land use at hand, may originate from the existing traffic flow; therefore, the project does not necessarily introduce all new traffic to the transportation system.

Pass-by traffic percentages differ relative to specific land uses and their densities. Some studies have shown varied results; however, the ITE publications, **Transportation and Land Development** by Virgil G. Stover and Frank J. Koepke, and **Trip Generation, 9th Edition**, have combined these studies to suggest uniform rates for given land uses. These rates range from 14-percent for hardware stores to 60-percent for neighborhood shopping centers, gross leasable area less than 100,000 square feet. Service stations and fast-food restaurants also exhibit high pass-by rates of 58-percent and 45-percent, respectively.

With the above in mind, a 25-percent pass-by rate and 2-percent reduction for shared trips was assumed for this study. From the trip generation calculations, the proposed site may generate approximately 17,380 weekday daily trips. After the consideration of pass-by and shared trips, approximately 12,690 new weekday daily trips would be generated. weekday and 32,100 Saturday daily trips. **Table 5** presents the trip generation of this proposed site.

Table 5
TRIP GENERATION

LAND USE	L.U.C.	DENSITY	DAILY TRIPS	AVERAGE WEEKDAY			
				AM PEAK HOUR ENTER	AM PEAK HOUR EXIT	PM PEAK HOUR ENTER	PM PEAK HOUR EXIT
HOTEL	310	100 rooms	522	31	22	31	29
HOTEL	310	100 rooms	522	31	22	31	29
SHOPPING CENTER	820	42,500 sqft	3,894	57	35	162	176
SUPERMARKET	850	60,000 sqft	5,409	126	78	272	262
H.T. RESTAURANT	932	26000 sqft	3,306	155	126	154	102
COFFEE/DONUT SHOP (w. drive thru)	937	2500 sqft	2,046	128	123	54	54
SERVICE STATION	944	10 pumps	1,686	59	57	69	69
Total Trips Generated		131,000 sqft	17,384	589	463	772	721
Internal Trips		2%	348	12	9	15	14
Primary Trips		73%	12,690	430	338	564	526
Pass-by Trips		25%	4,346	147	116	193	180

Reference: Institute of Transportation Engineers, **Trip Generation, 9th Edition**.

Trip Distribution and Assignment

Traffic distribution used for this trip assignment consistent with a community size shopping center with highway oriented development. Traffic access to the site assumes a primary distribution with 20-percent from the I-81 south and 10-percent from I-81 north. From Cummings Street, south of I-81, 10-percent of the trips were assigned. From the north, 60-percent of the trips were assigned from area residents; 15-percent were assigned to the E. Main Street using Pecan Street and 45-percent north on Cummings Street.

The pass-by trips assume a 80-percent distribution from Cummings Street with a 50-30 split inbound/outbound for the AM peak hour and a outbound/inbound in the PM peak hour. **Figure 9** illustrates the primary distribution and assignment. **Figures 10A and 10B** illustrate the pass-by trip distributions for the AM and PM peak hour.

Using the trip distributions and the trip generation for the site, project trips were assigned to the transportation system. **Figures 11A, 11B, and 11C** illustrate the primary, pass-by trips, and their total trips, respectively. Negative traffic volumes or the reduction of trips represent adjustments for pass-by traffic which are intercepted trips from the passing traffic.

PRIMARY TRIP DISTRIBUTION AND ASSIGNMENT

The Meadows

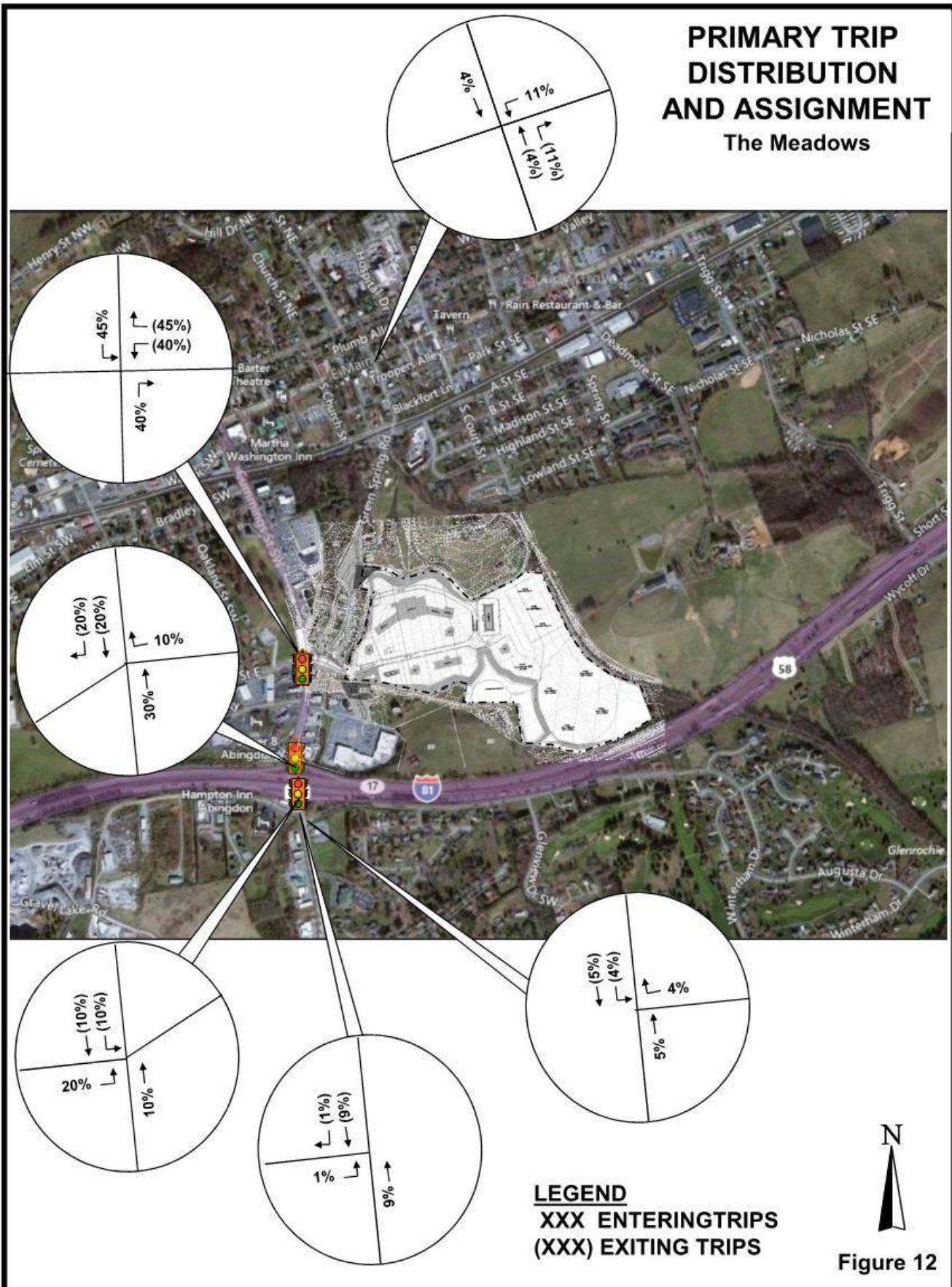


Figure 12

AM PASS-BY TRIP DISTRIBUTION AND ASSIGNMENT

The Meadows



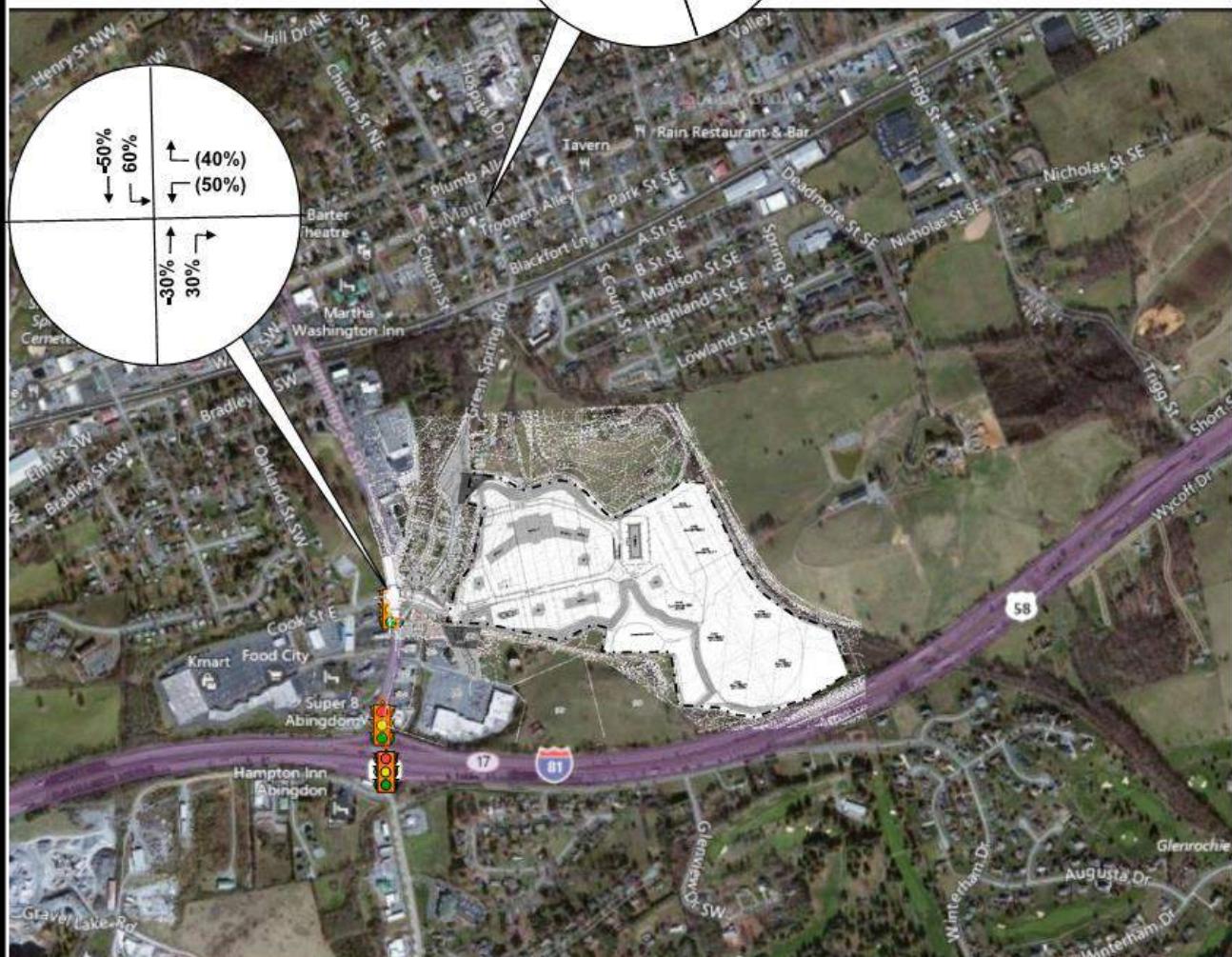
LEGEND
 XXX ENTERINGTRIPS
 (XXX) EXITING TRIPS



Figure 13A

PM PASS-BY TRIP DISTRIBUTION AND ASSIGNMENT

The Meadows



LEGEND
 XXX ENTERINGTRIPS
 (XXX) EXITING TRIPS



Figure 13B

PRIMARY PEAK-HOUR TRIPS

The Meadows

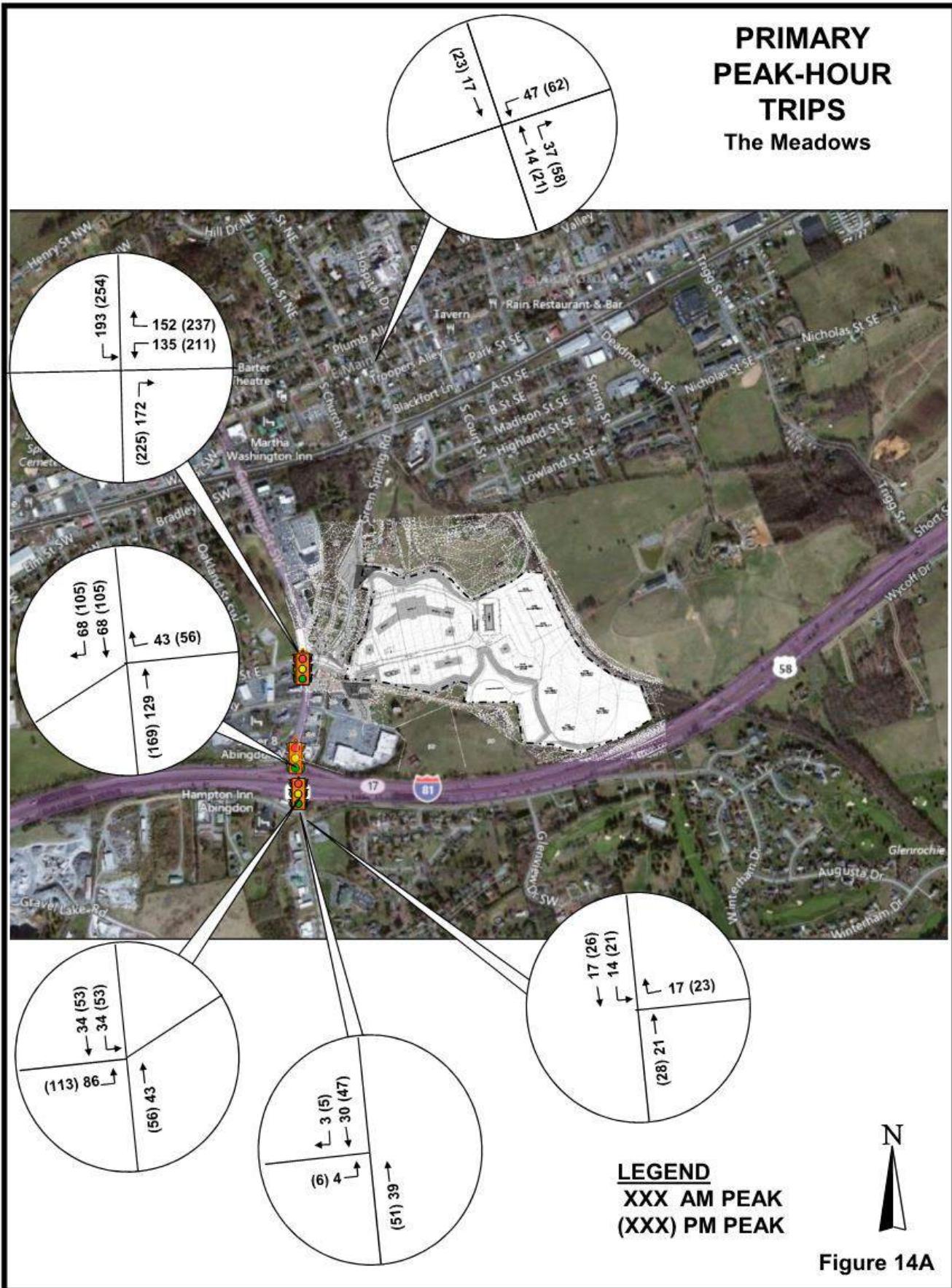


Figure 14A

**PASS-BY
PEAK-HOUR
TRIPS**
The Meadows



LEGEND
XXX AM PEAK
(XXX) PM PEAK



Figure 14B

**TOTAL SITE
PEAK-HOUR
TRIPS**
The Meadows

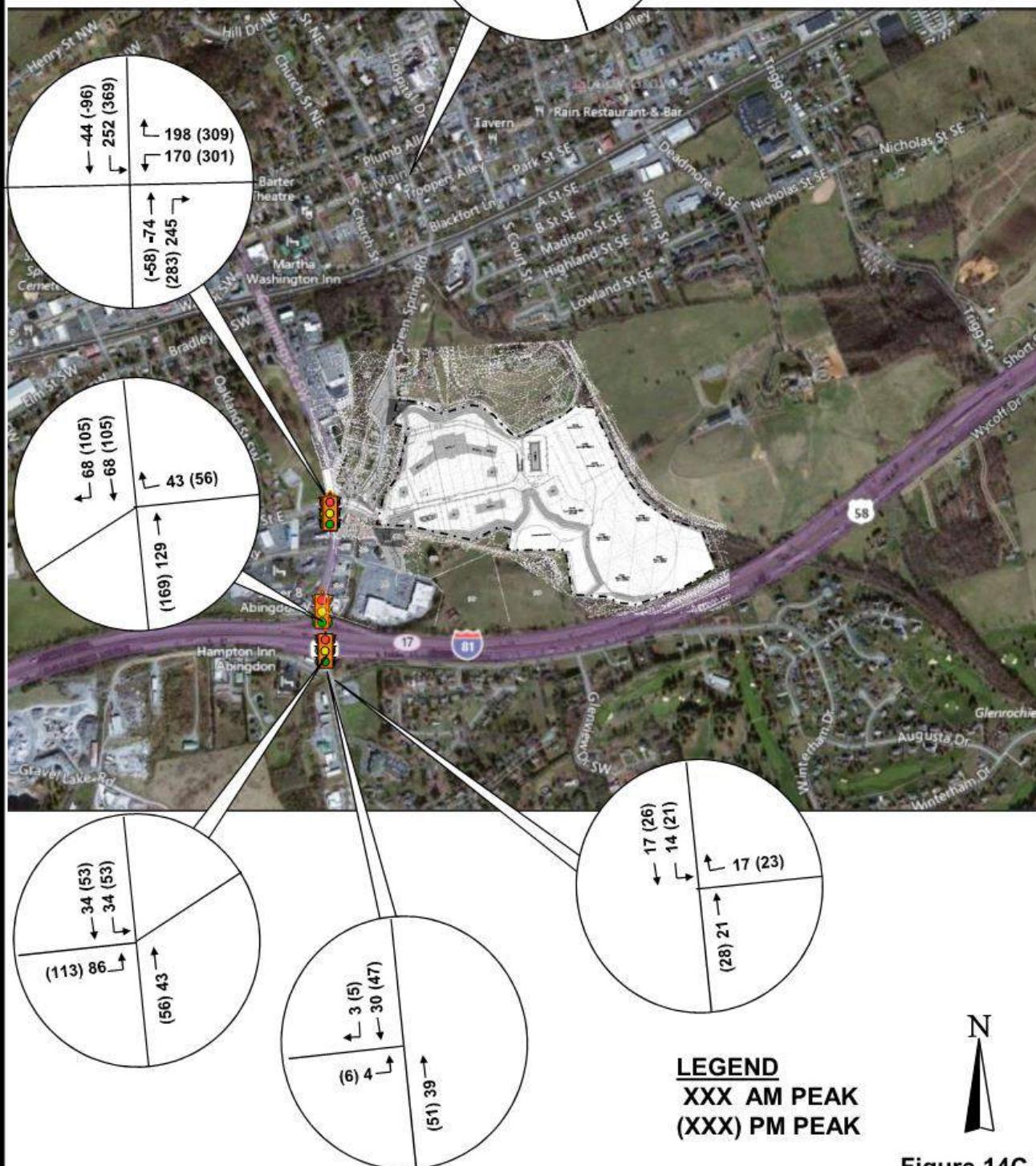


Figure 14C

TOTAL SITE PEAK-HOUR TRIPS

The Meadows

With Interchange Modification



LEGEND
XXX AM PEAK
(XXX) PM PEAK



Figure 14D

ANALYSES OF FUTURE TRAFFIC CONDITIONS WITH DEVELOPMENT

Projected Traffic Volumes

The addition of project trips to background traffic is the 2018 and 2024 projected traffic volumes.

Figures 15 illustrate 2018 projected traffic, and **16A and 16B** illustrate the projected traffic for 2024 without and with interchange improvements. These projected intersection volumes are analyzed for the intersections' future capacity and LOS. From the analyses and the projected traffic, measures are developed to facilitate the necessary access to and from the site.

Projected Capacity and Level of Service

Traffic is analyzed with the proposed development to again determine the capacity and LOS for the site access and adjacent study intersection. **Table 6** presents the results of these analyses. For the 2018 traffic conditions with the proposed development, a minimum LOS E can be achieved with optimized signal timing. **Table 7** presents the summary of all the capacity and LOS analyses and includes analyses reflecting roadway improvements. **Figures 17A and 17B** illustrate the 2018 intersection geometrics, traffic control, and levels of service for the intersection lane groups. **Figures 18A-D** illustrate the intersection geometry, traffic control, and LOS for 2024. Analyses with an improved interchange is illustrated in Figures 18C and D.

Traffic queues were estimated using SimTraffic. For 2018, **Figures 19A and 19B** illustrate these queues. Queues for 2024 are illustrated in **Figures 20A-D** which show both the queues developed with and without the improved interchange.

2018 PROJECTED PEAK-HOUR TRAFFIC

The Meadows

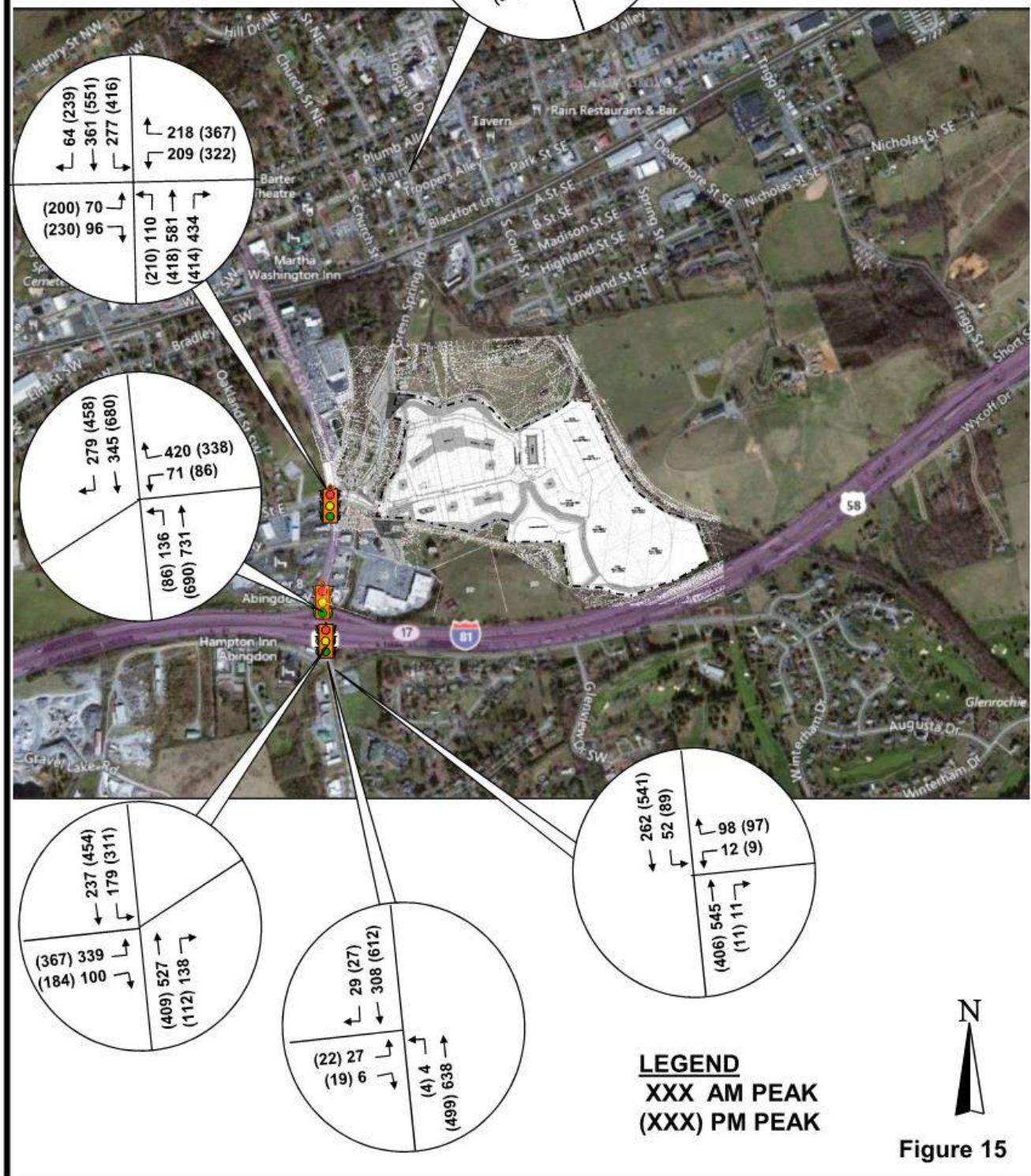


Figure 15

2024 PROJECTED PEAK-HOUR TRAFFIC

The Meadows

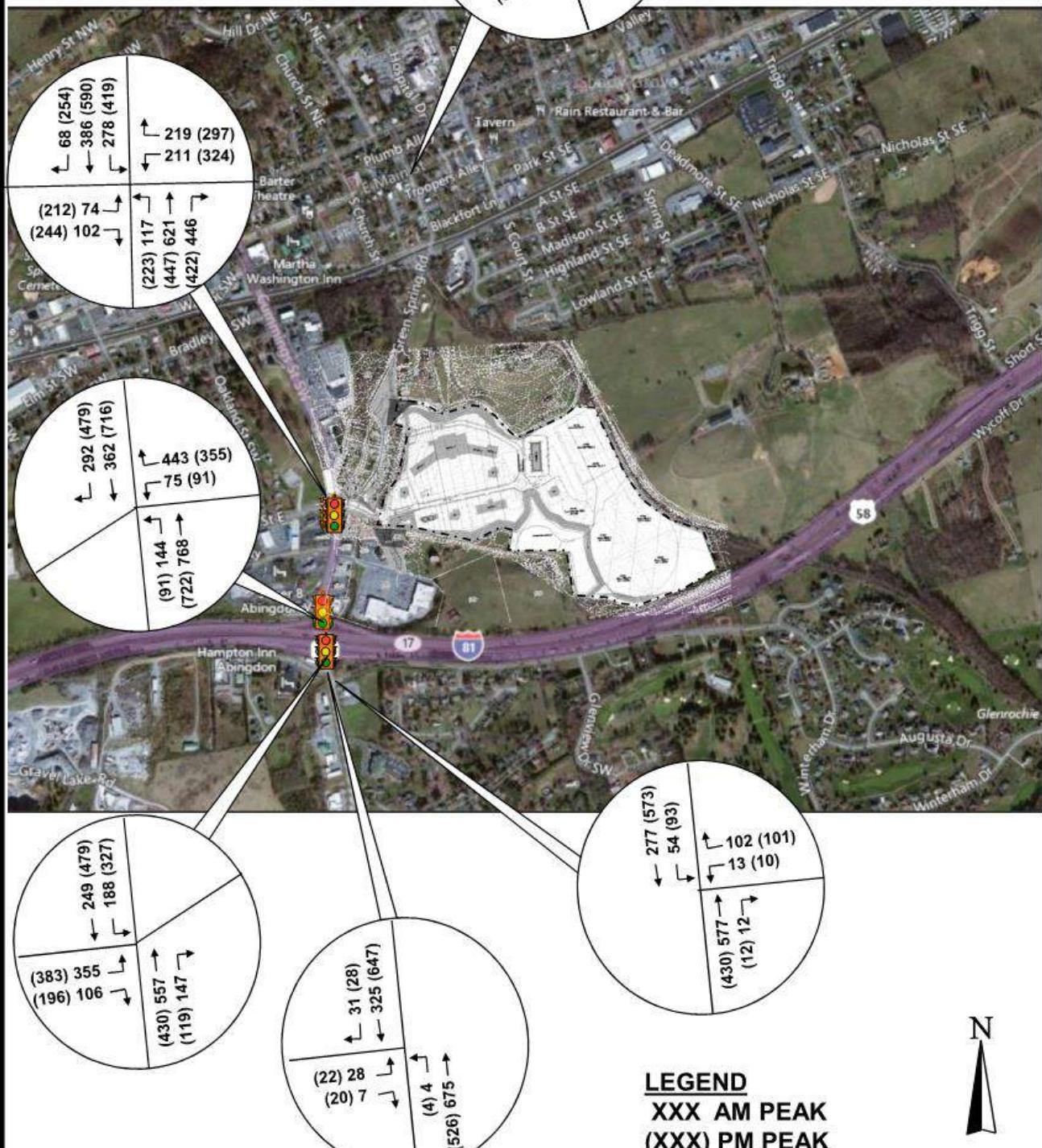


Figure 16A

2024 PROJECTED PEAK-HOUR TRAFFIC

The Meadows

With Interchange Modification



LEGEND
XXX AM PEAK
(XXX) PM PEAK



Figure 16B

Table 6
PROJECTED CAPACITIES AND LEVELS OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2018 BUILDOUT			2024		
			V/C	DELAY	LOS	V/C	DELAY	LOS
Cummings Street at Cook Street/Green Springs Road	SIGNAL	AM	0.63	24.2	C	0.66	24.5	C
		PM	0.78	36.0	D	0.85	31.9	C
Mitigation Cummings Street SB Dual Left-turn Lane	SIGNAL	AM	0.40	20.7	C	0.43	20.2	C
		PM	0.66	31.0	C	0.70	30.5	C
Mitigation Proposed Interchange	SIGNAL	AM				0.66	20.8	C
		PM				0.93	28.8	C
Cummings Street at I-81 SB Ramps	SIGNAL	AM	0.62	37.0	D	0.65	39.1	D
		PM	0.58	41.3	D	0.67	50.2	D
Mitigation Proposed Interchange	SIGNAL	AM				0.90	21.4	C
		PM				0.83	17.8	B
Cummings Street at I-81 NB Ramps	SIGNAL	AM	0.67	38.5	D	0.71	40.4	D
		PM	0.78	35.5	D	0.91	43.8	D
Mitigation Proposed Interchange: Realignment with Country Club						0.83	26.9	C
						0.87	29.0	C
Cummings Street at Commerce Street	STOP EBL/EBR	AM	0.12 / 0.01	21.9 / 10.0	C / A	0.14 / 0.01	23.9 / 10.1	C / B
		PM	0.14 / 0.04	29.2 / 13.0	D / B	0.17 / 0.05	34.0 / 13.4	D / B
Cummings Street at Country Club Drive	STOP WBL/WBR	AM	0.05 / 0.21	20.3 / 14.1	C / B	0.06 / 0.23	21.9 / 14.8	C / B
		PM	0.06 / 0.17	29.3 / 12.1	D / B	0.08 / 0.19	33.9 / 12.5	D / B
Mitigation Proposed Interchange: Realignment with I-81NB Off-Ramp	SIGNAL	AM				0.83	26.9	C
		PM				0.87	29.0	C
E. Main Street at Pecan Street	SIGNAL	AM	0.44	7.9	A	0.46	8.7	A
		PM	0.59	10.2	B	0.62	10.8	B
Mitigation Main Street Single Left-turn Lanes (EB-L & WB-L)	SIGNAL	AM	0.38	7.1	A	0.40	7.2	A
		PM	0.58	8.1	A	0.62	8.6	A

Note: Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

Table 7
CAPACITY AND LEVEL OF SERVICE SUMMARY

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2015 TRAFFIC			2018 BACKGROUND			2024 BACKGROUND			2018 BUILDOUT			2024 BUILDOUT			
			V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS	
Cummings Street at Cook Street	SIGNAL	AM	0.36	7.4	A													
		PM	0.63	12.4	B													
Mitigation Realignment of Green Springs Road with Cook Street	SIGNAL	AM				0.33	13.6	B	0.33	14.5	B	0.63	24.2	C	0.66	24.5	C	
		PM				0.61	23.3	C	0.65	24.9	C	0.78	36.0	D	0.95	31.9	C	
Mitigation Cummings Street SB Dual Left-turn Lane	SIGNAL	AM																
		PM																
Mitigation Proposed Interchange	SIGNAL	AM																
		PM																
Cummings Street at Green Springs Road	STOP WBSBL	AM	0.15 / 0.04	14.9 / 1.8	B / A													
		PM	0.16 / 0.06	13.1 / 2.0	B / A													
Cummings Street at I-81 SB Ramps	SIGNAL	AM	0.57	32.0	C	0.58	25.6	C	0.57	28.9	C	0.62	37.0	D	0.65	39.1	D	
		PM	0.55	30.7	C	0.51	28.2	C	0.57	29.4	C	0.58	41.3	D	0.67	50.2	D	
Mitigation Proposed Interchange	SIGNAL	AM																
		PM																
Cummings Street at I-81 NB Ramps	SIGNAL	AM	0.66	38.3	D	0.63	31.1	C	0.63	34.1	C	0.67	38.5	D	0.71	40.4	D	
		PM	0.62	27.7	C	0.58	26.0	C	0.65	27.1	C	0.78	35.5	D	0.91	43.8	D	
Mitigation Proposed Interchange: Realignment with Country Club																		
Cummings Street at Commerce Street	STOP EBUEBR	AM	0.08 / 0.01	18.8 / 3.7	C / A	0.09 / 0.01	19.6 / 9.8	C / A	0.10 / 0.01	21.1 / 9.9	C / A	0.12 / 0.01	21.9 / 10.0	C / A	0.14 / 0.01	23.9 / 10.1	C / B	
		PM	0.08 / 0.04	22.7 / 12.1	C / B	8.00	0.04	23.7 / 12.4	C / B	0.10 / 0.05	26.5 / 12.8	D / B	0.14 / 0.04	29.2 / 13.0	D / B	0.17 / 0.05	34.0 / 13.4	D / B
Cummings Street at Country Club Drive	STOP WBL/WBR	AM	0.04 / 0.16	17.8 / 13.1	C / B	0.05 / 0.17	18.3 / 13.3	C / B	0.05 / 0.19	19.7 / 13.9	C / B	0.06 / 0.21	20.3 / 14.1	C / B	0.06 / 0.23	21.9 / 14.8	C / B	
		PM	0.05 / 0.12	23.3 / 11.3	C / B	0.05 / 0.13	24.4 / 11.5	C / B	0.06 / 0.14	27.4 / 11.8	D / B	0.06 / 0.17	29.3 / 12.1	D / B	0.08 / 0.19	33.9 / 12.5	D / B	
Mitigation Proposed Interchange: Realignment with I-81 NB Off-Ramp	SIGNAL	AM																
E. Main Street at Pecan Street	SIGNAL	AM	0.36	6.7	A	0.38	6.9	A	0.41	7.1	A	0.44	7.9	A	0.46	8.7	A	
		PM	0.49	7.2	A	0.51	7.7	A	0.54	8.0	A	0.59	10.2	B	0.62	10.8	B	
Mitigation Main Street Single Left-turn Lanes (EB-L & WB-L)	SIGNAL	AM																
		PM																

Note: Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

2018 AM PEAK HOUR PROJECTED LOS AND GEOMETRY

The Meadows

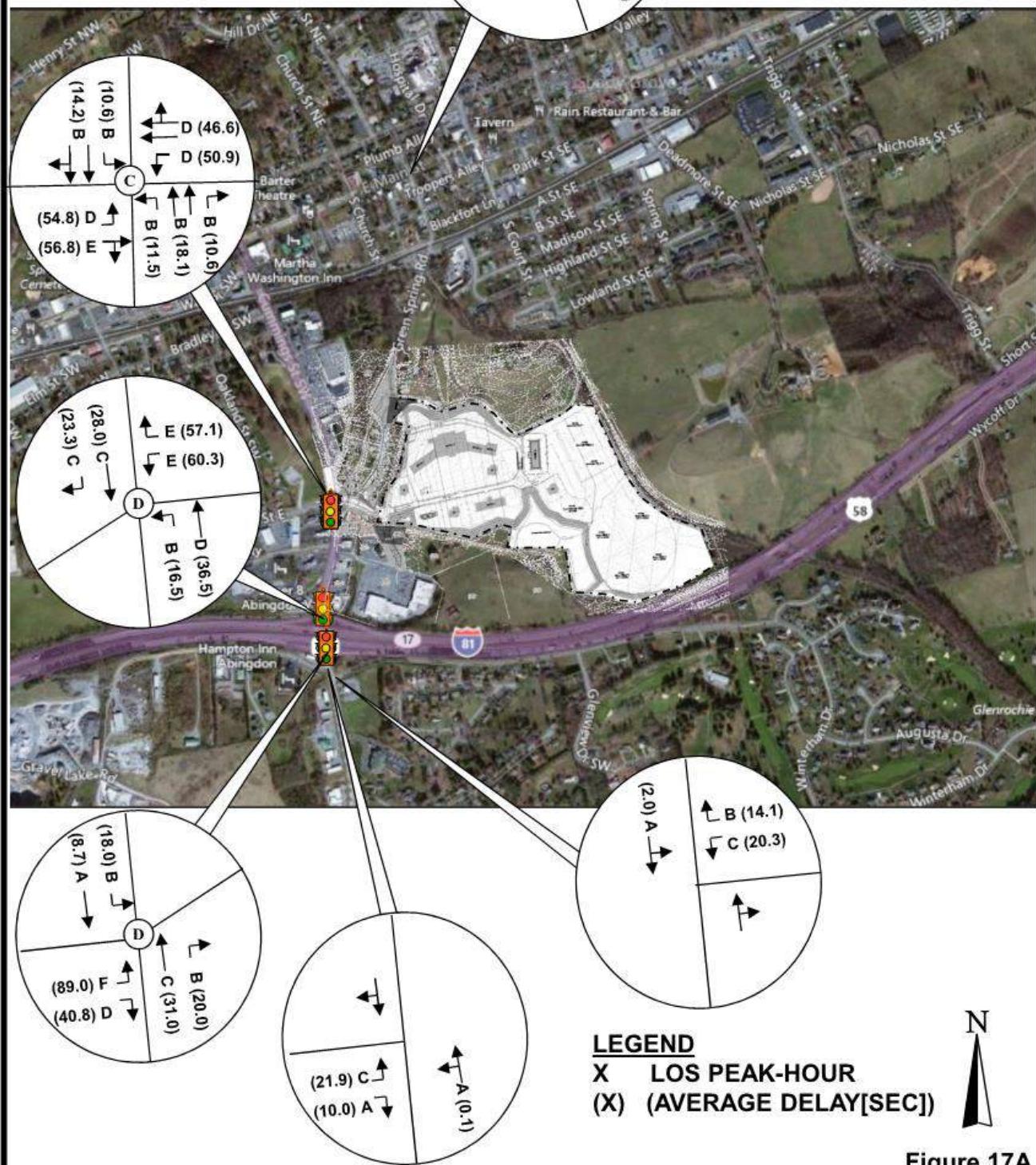


Figure 17A

2018 PM PEAK HOUR PROJECTED LOS AND GEOMETRY

The Meadows

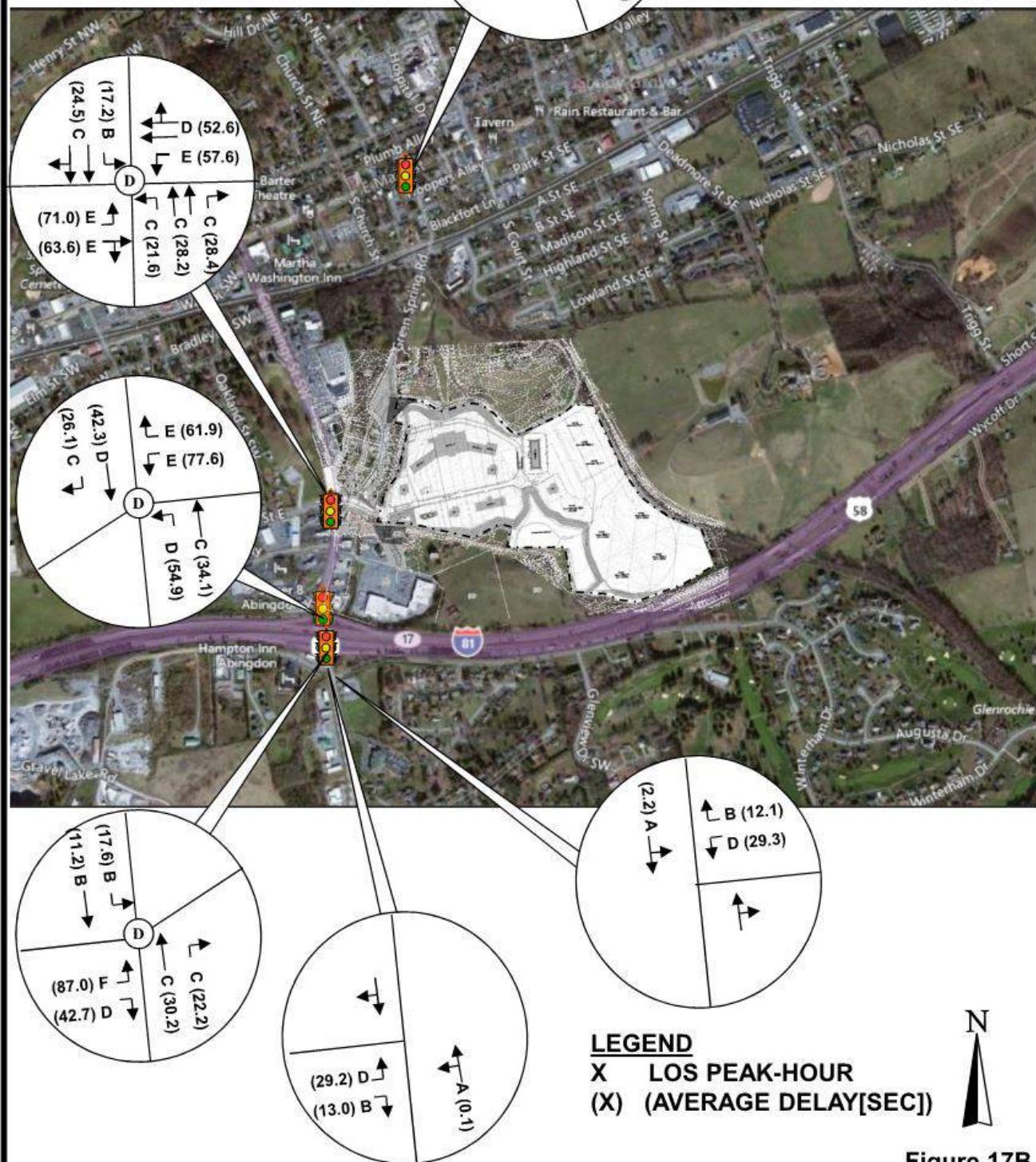


Figure 17B

2024 AM PEAK HOUR PROJECTED LOS AND GEOMETRY

The Meadows

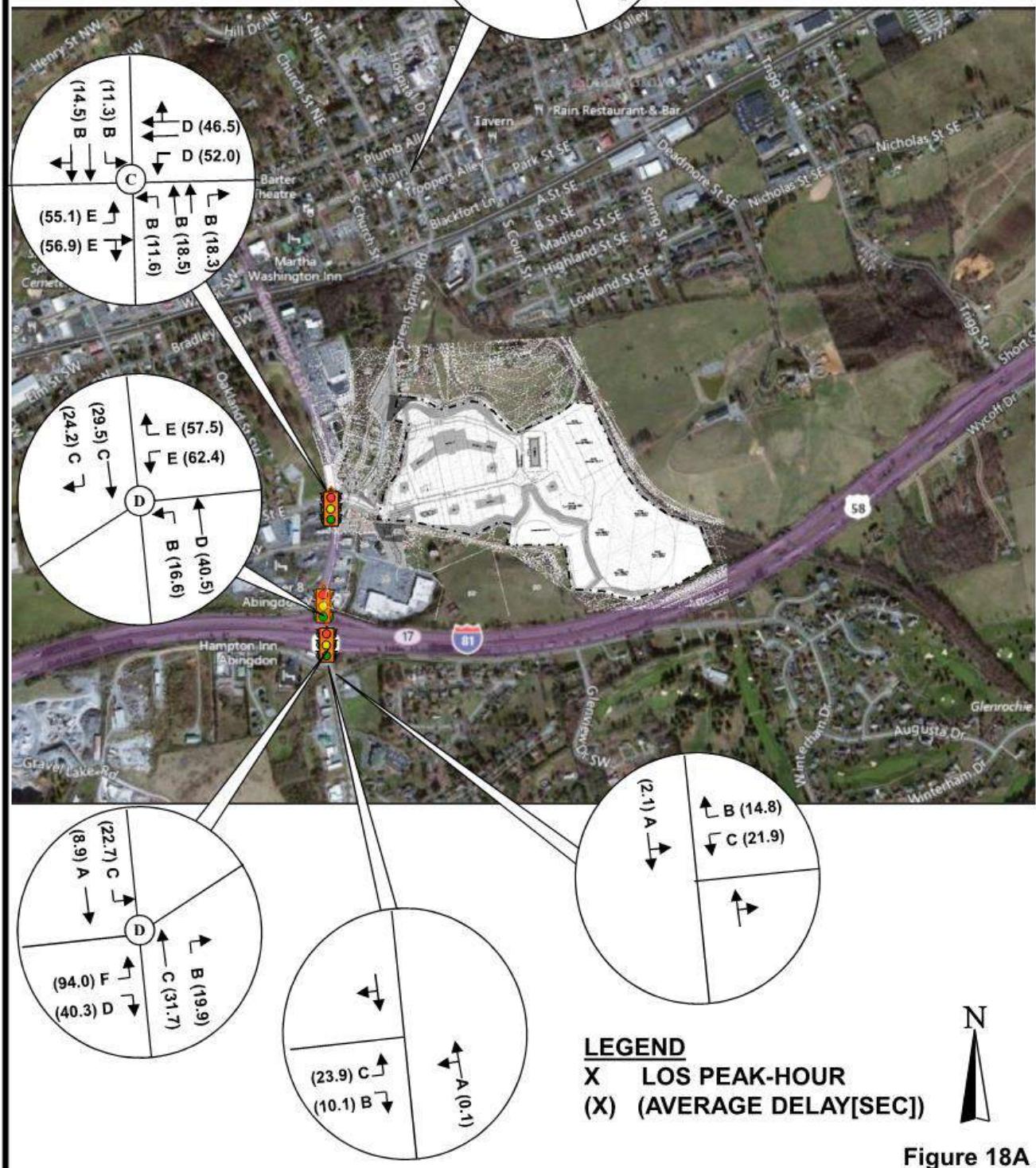


Figure 18A

2024 PM PEAK HOUR PROJECTED LOS AND GEOMETRY

The Meadows

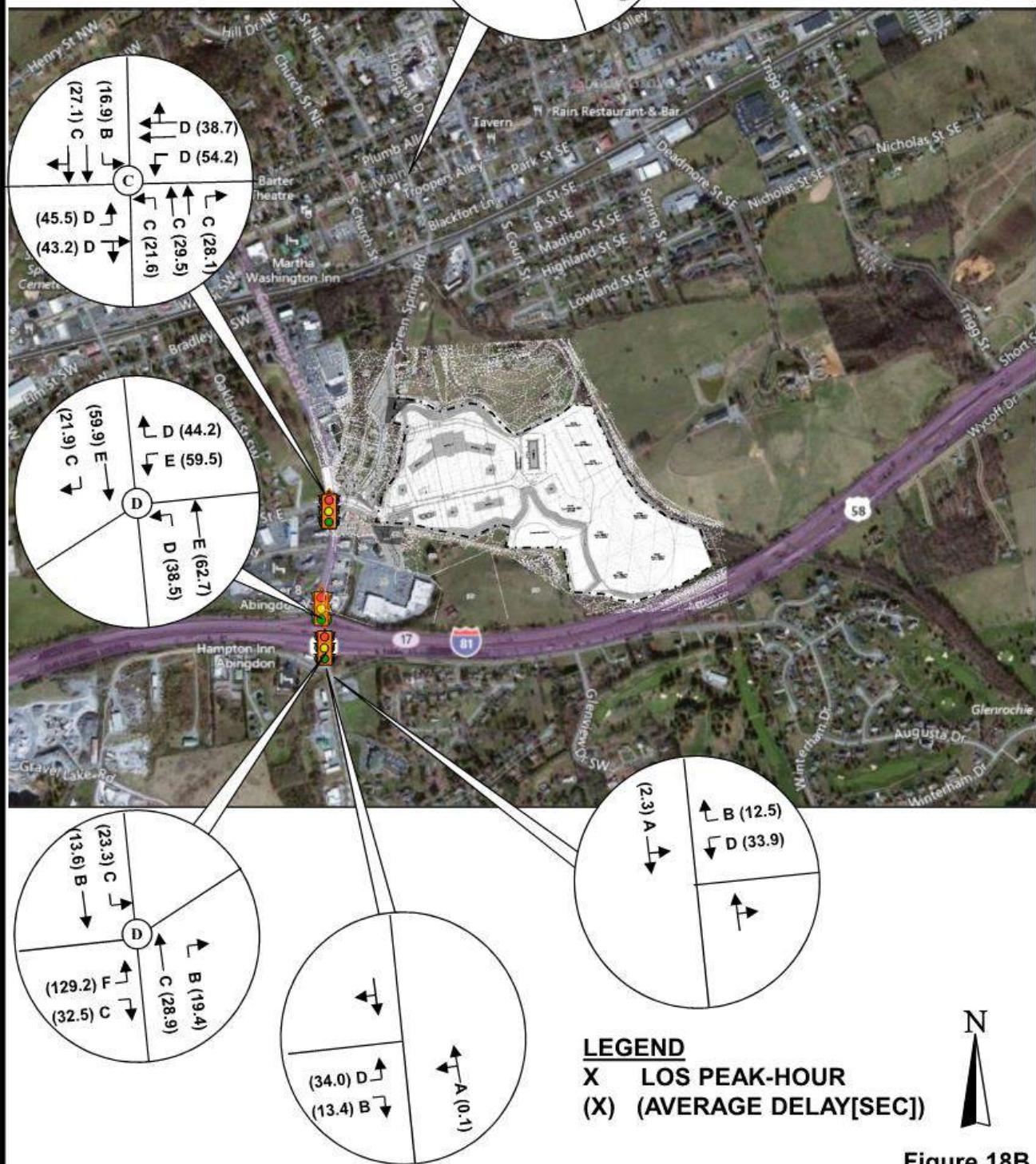
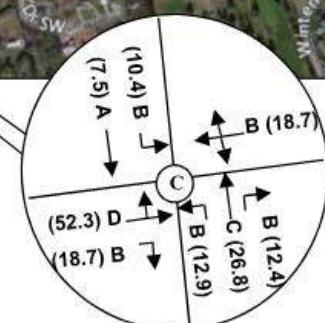


Figure 18B

2024 AM PEAK HOUR PROJECTED LOS AND GEOMETRY

The Meadows

With Interchange Modification



LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



Figure 18C

2024 PM PEAK HOUR PROJECTED LOS AND GEOMETRY

The Meadows

With Interchange Modification



LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



Figure 18D

2018 AM PEAK HOUR PROJECTED QUEUE LENGTHS

The Meadows

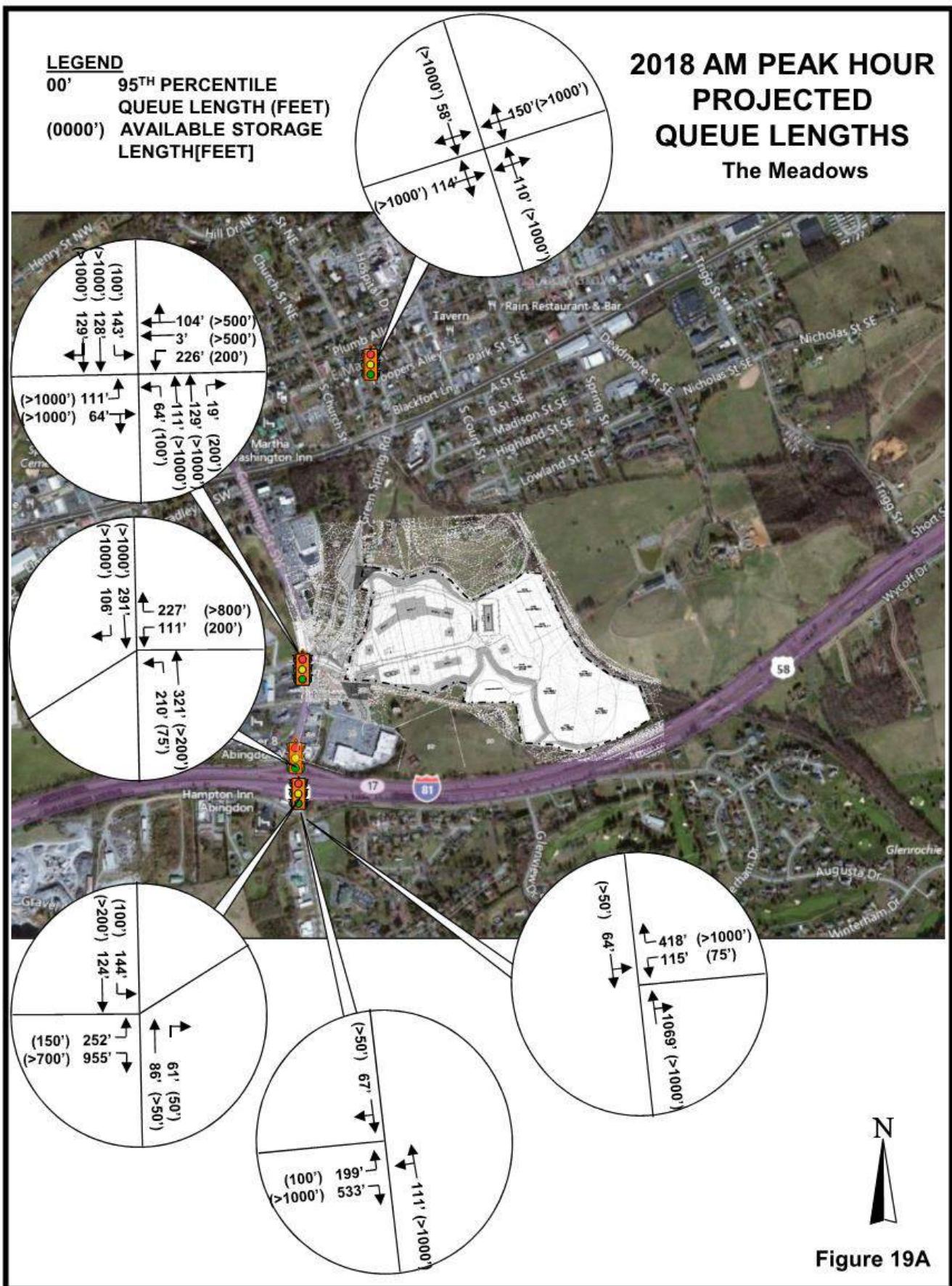
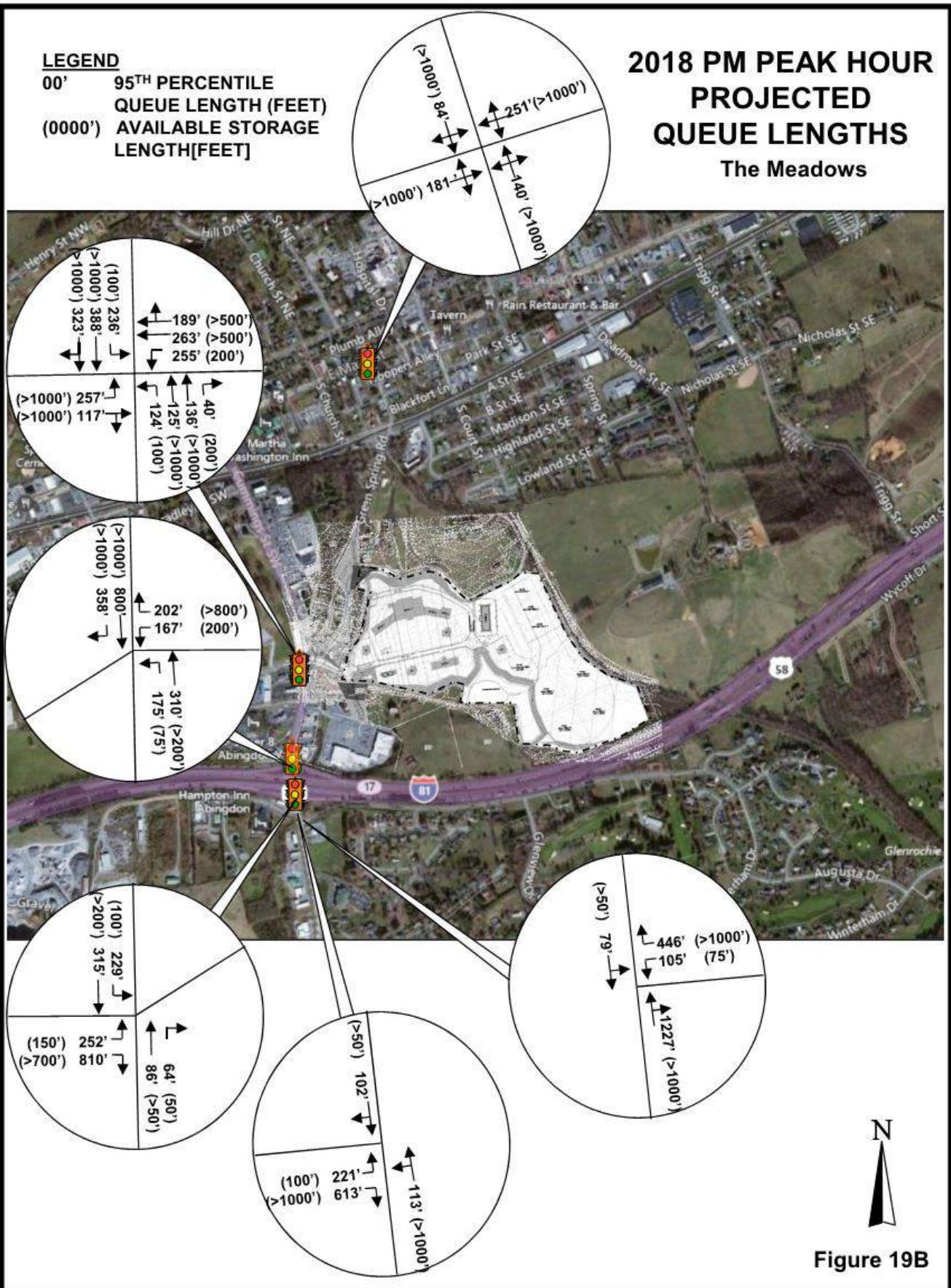


Figure 19A



**2024 AM
PEAK HOUR
PROJECTED
QUEUE LENGTHS**
The Meadows

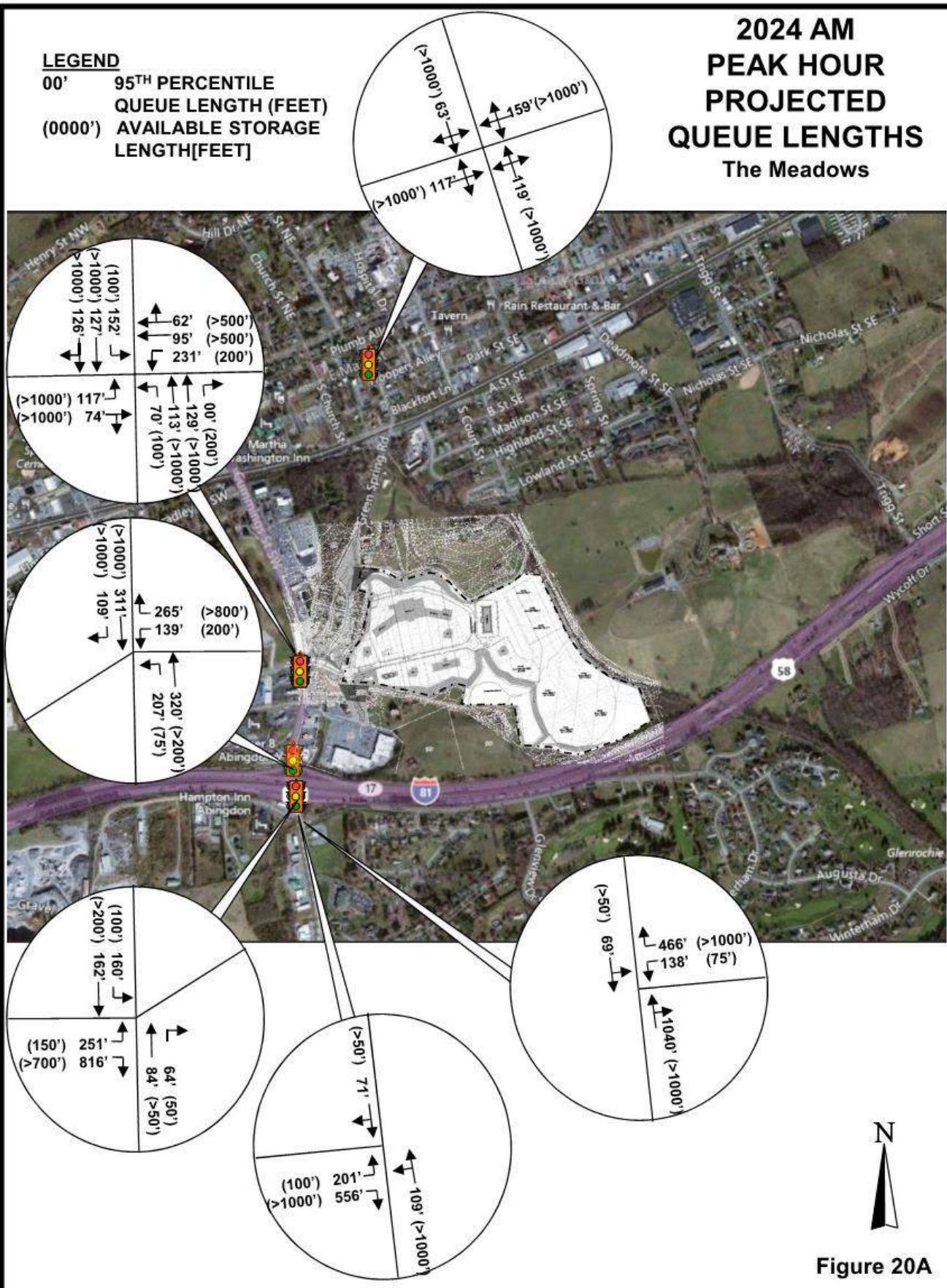


Figure 20A

**2024 PM
PEAK HOUR
PROJECTED
QUEUE LENGTHS**
The Meadows

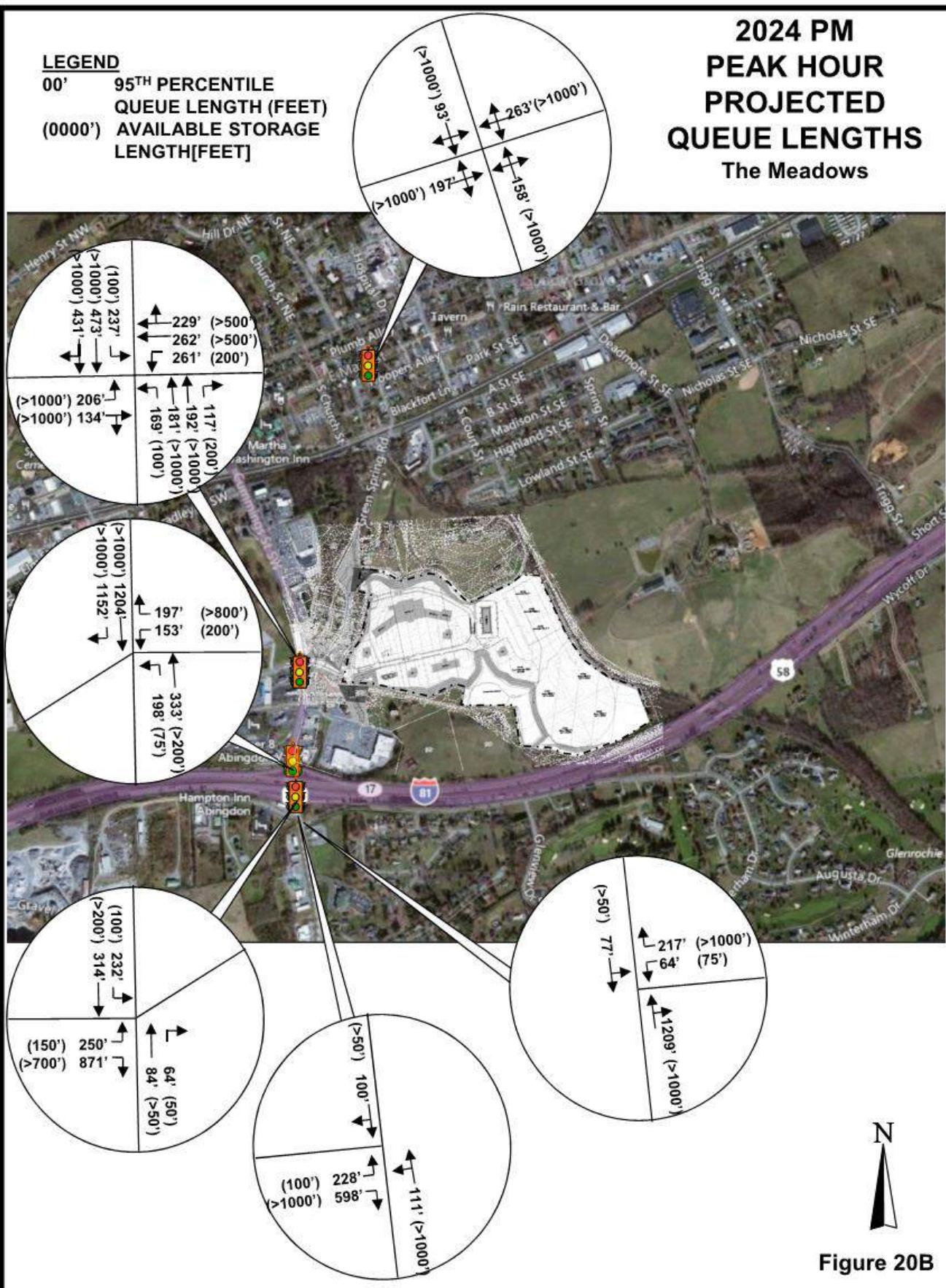


Figure 20B

**2024 AM
PEAK HOUR
PROJECTED
QUEUE LENGTHS**
The Meadows
With Interchange Modification

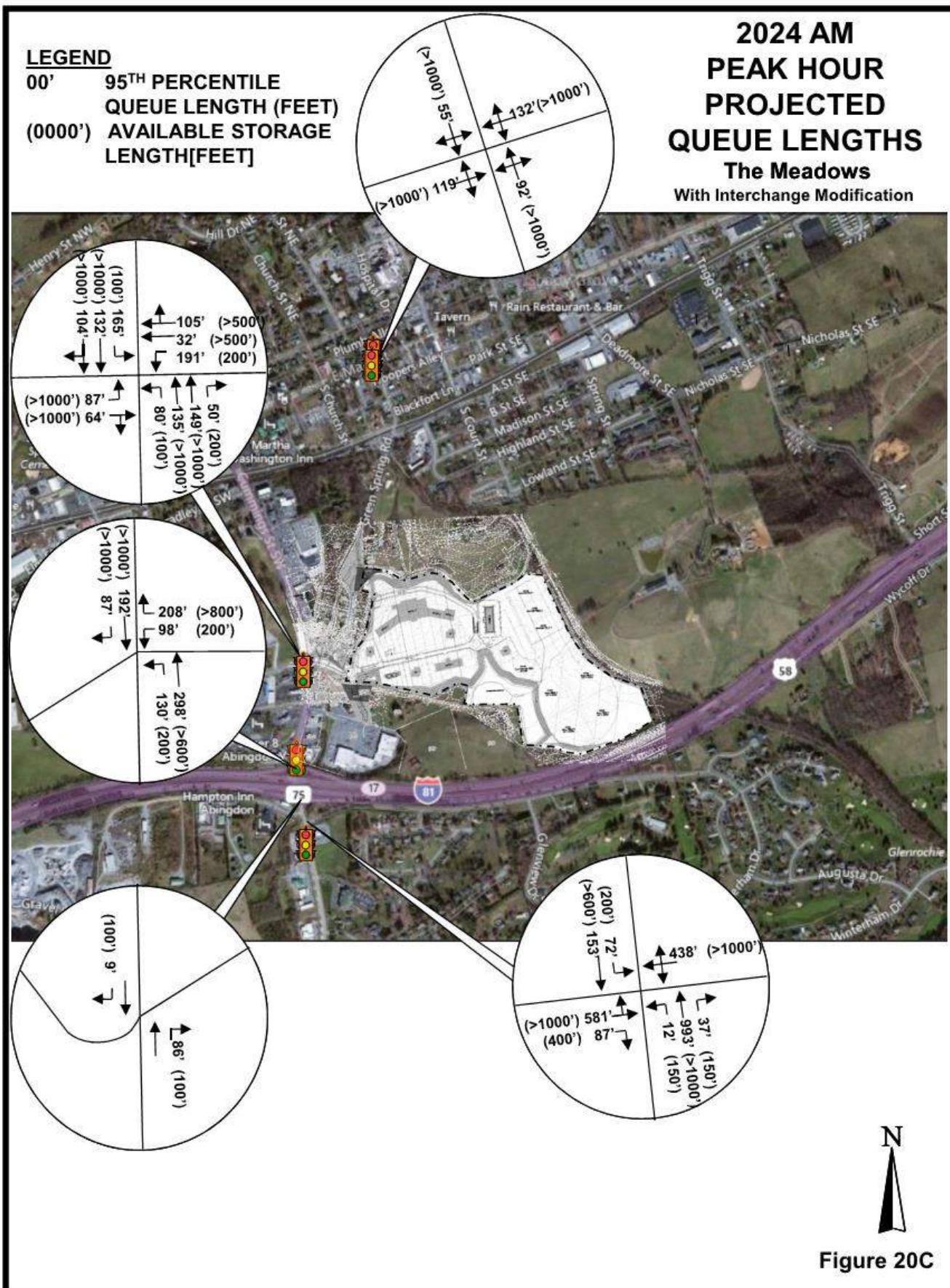


Figure 20C

2024 PM PEAK HOUR PROJECTED QUEUE LENGTHS

The Meadows

With Interchange Modification

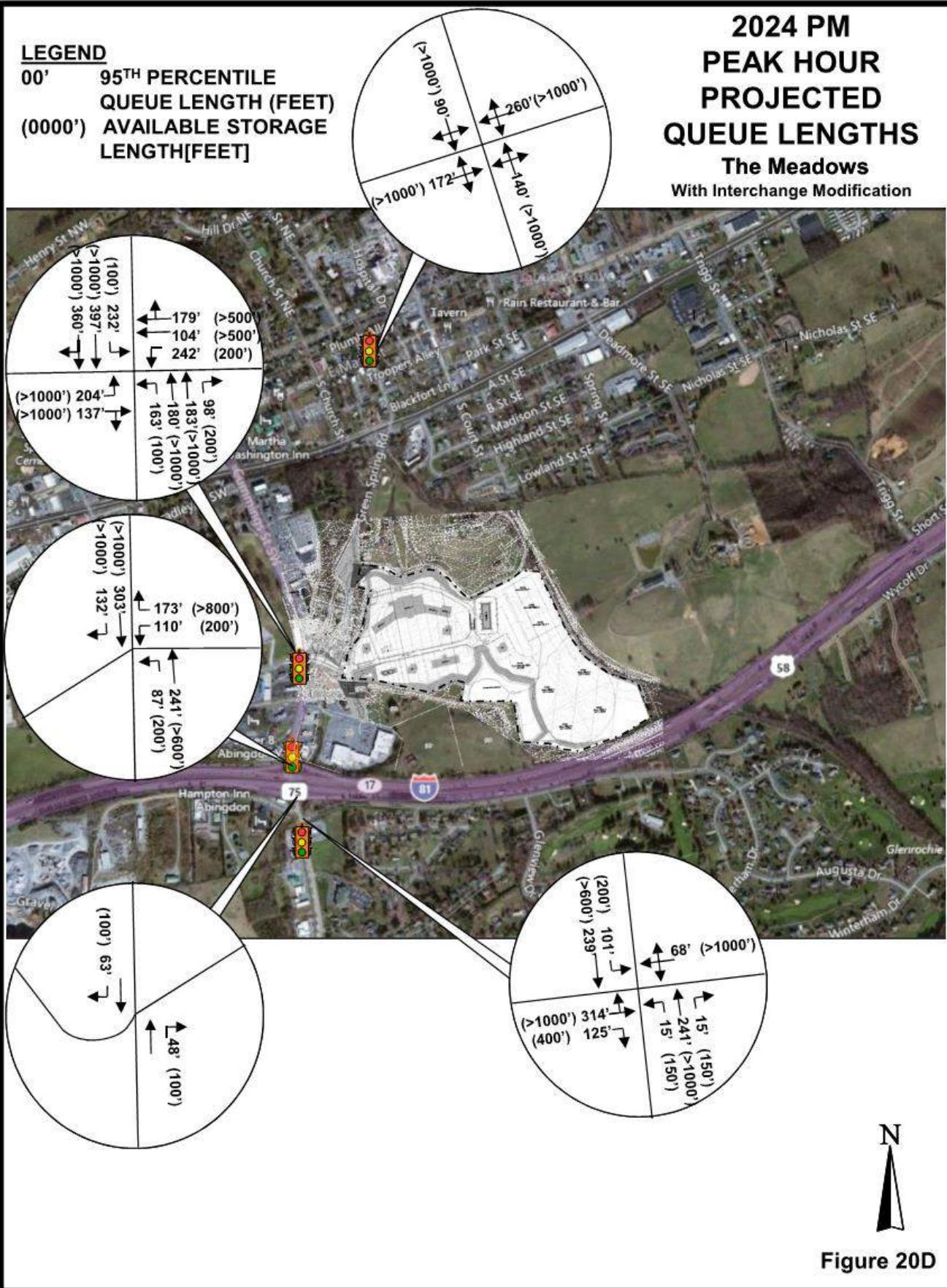


Figure 20D

With the proposed development, the study intersections continue to operate at acceptable levels of service. The I-81 interchange with its current configuration remains congested with the failing northbound off-ramp and adverse queues resulting from the distance between ramps. With the proposed interchange improvements, the interchange operates more efficiently providing acceptable intersection LOS but the left-turn movement from the northbound I-81 off-ramp may experience a E LOS with the proposed development. The left-turn volume exceeds 300vph and is approaching 400vph. Therefore, a double left-turn lane might be considered for the approach mitigating the E LOS.

The proposed intersection of Cook Street and Green Springs Road with Cummings Street, providing for the access to the proposed development operates at an acceptable LOS but the southbound left-turn from Cummings Street exceeds 400vph thereby suggesting double left-turn lanes may be for the proper left-turn lane storage from Cummings Street to Green Springs Road. In addition, the intersection of Main Street and Pecan Street, providing access to and from the site operates with an acceptable LOS, but the left-turn traffic for the site will impede the more efficient operation of the intersection. A left-turn lane from westbound Main Street to southbound Pecan Street would improve the intersection operation and efficiency but would require the removal of some on-street parking in the vicinity of the intersection. Figures 21A and 21B illustrates the intersection lane group LOS for 2018 mitigation, and 2024 intersection mitigation geometry and LOS is illustrated in **Figures 22A and 22B**. Resulting queues for 2018 are illustrated in **Figures 23A and 23B**. Queues for 2024 are illustrated in **Figures 24A and 24B**.

Table 9 is provided for more detailed intersection level of service summary.

**2018 AM PEAK HOUR
PROJECTED LOS
WITH MITIGATION**
The Meadows



LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



Figure 21A

2018 PM PEAK HOUR PROJECTED LOS WITH MITIGATION

The Meadows



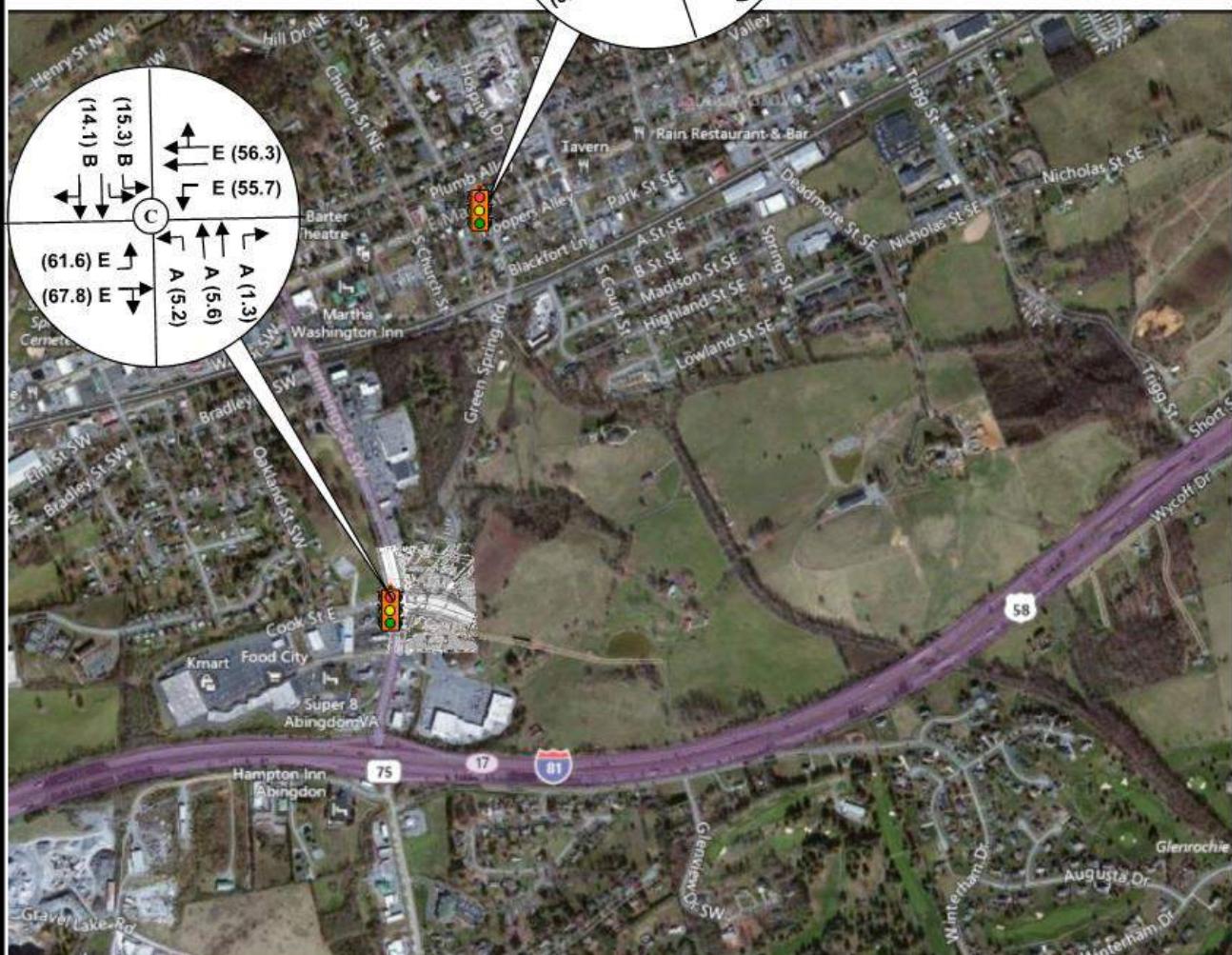
LEGEND
X LOS PEAK-HOUR
(X) (AVERAGE DELAY[SEC])



Figure 21B

2024 AM PEAK HOUR PROJECTED LOS WITH MITIGATION

The Meadows

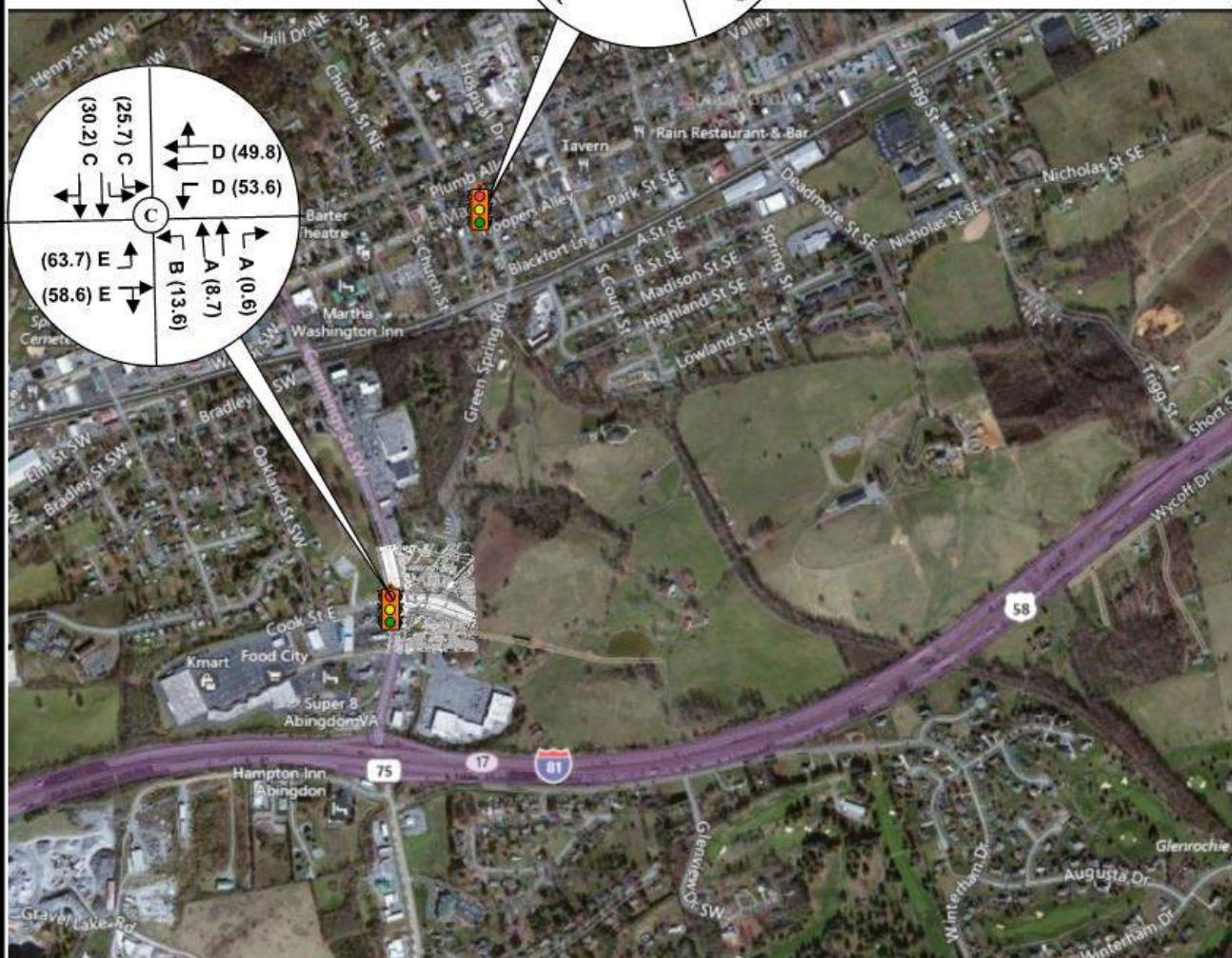


LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



Figure 22A

**2024 PM PEAK HOUR
PROJECTED LOS
WITH MITIGATION**
The Meadows



LEGEND
 X LOS PEAK-HOUR
 (X) (AVERAGE DELAY[SEC])



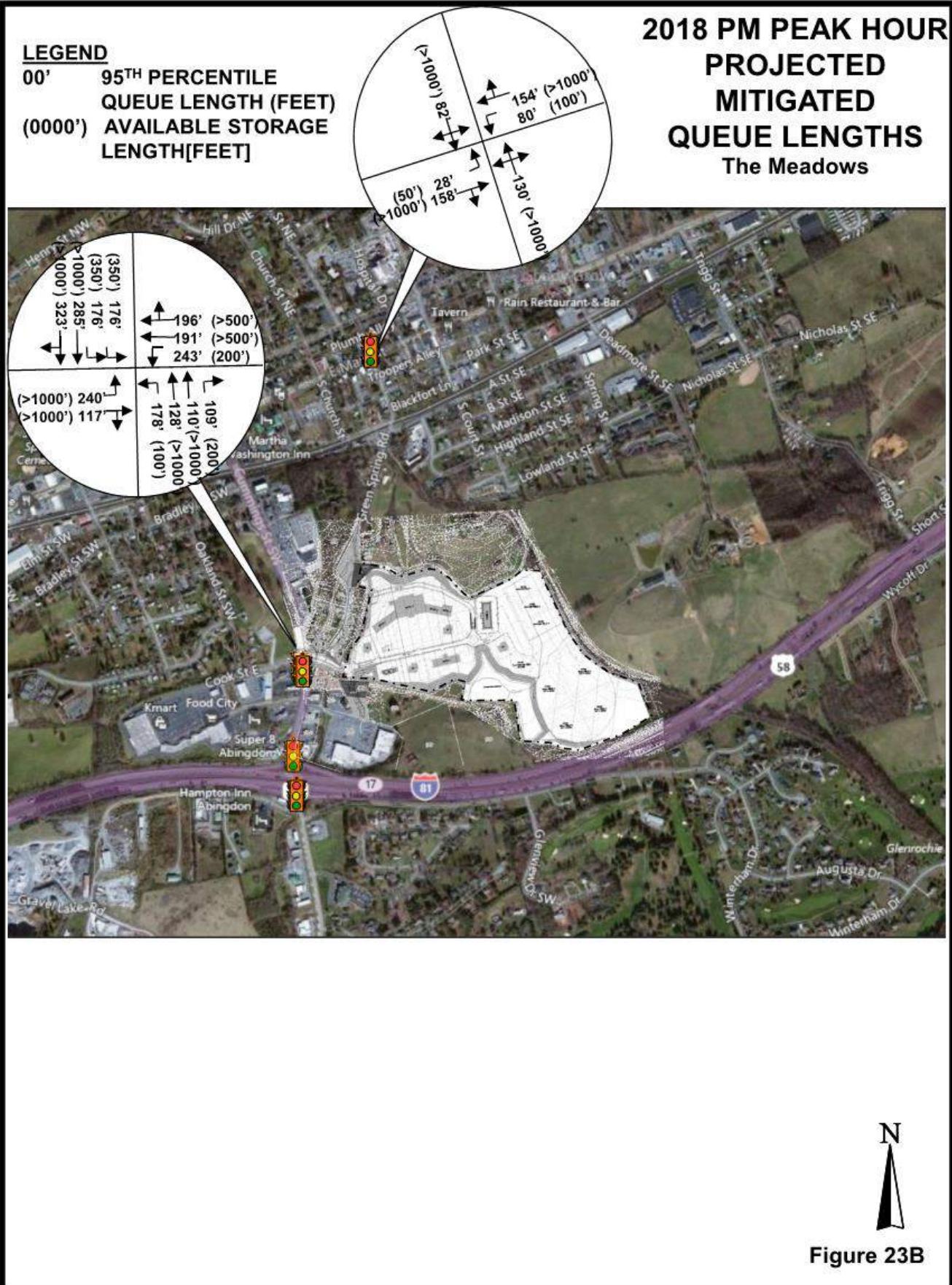
Figure 22B

**2018 AM PEAK HOUR
PROJECTED
MITIGATED
QUEUE LENGTHS**
The Meadows



Figure 23A

**2018 PM PEAK HOUR
PROJECTED
MITIGATED
QUEUE LENGTHS**
The Meadows



2024 AM PEAK HOUR PROJECTED MITIGATED QUEUE LENGTHS

The Meadows

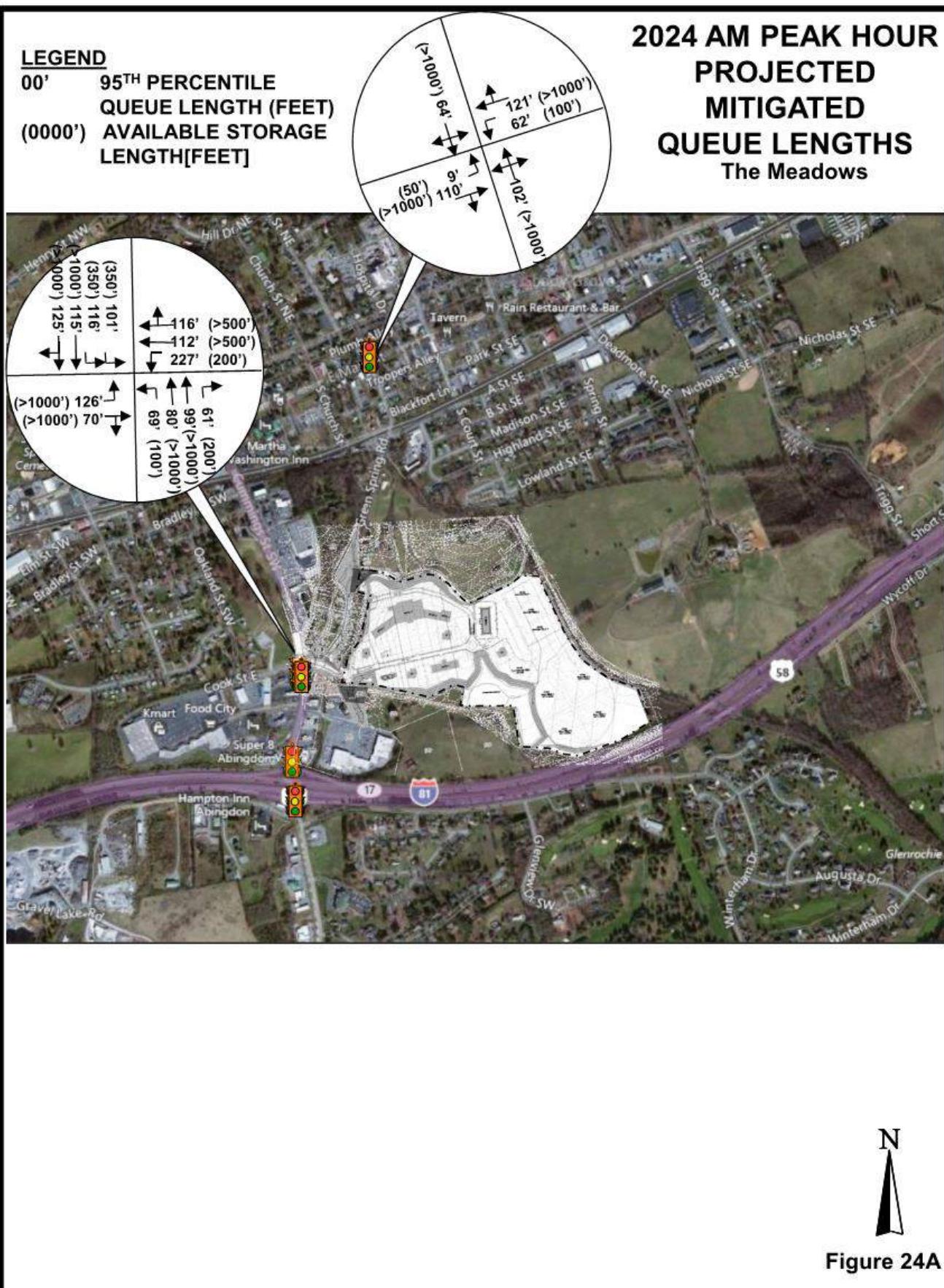


Figure 24A

2024 PM PEAK HOUR PROJECTED MITIGATED QUEUE LENGTHS

The Meadows

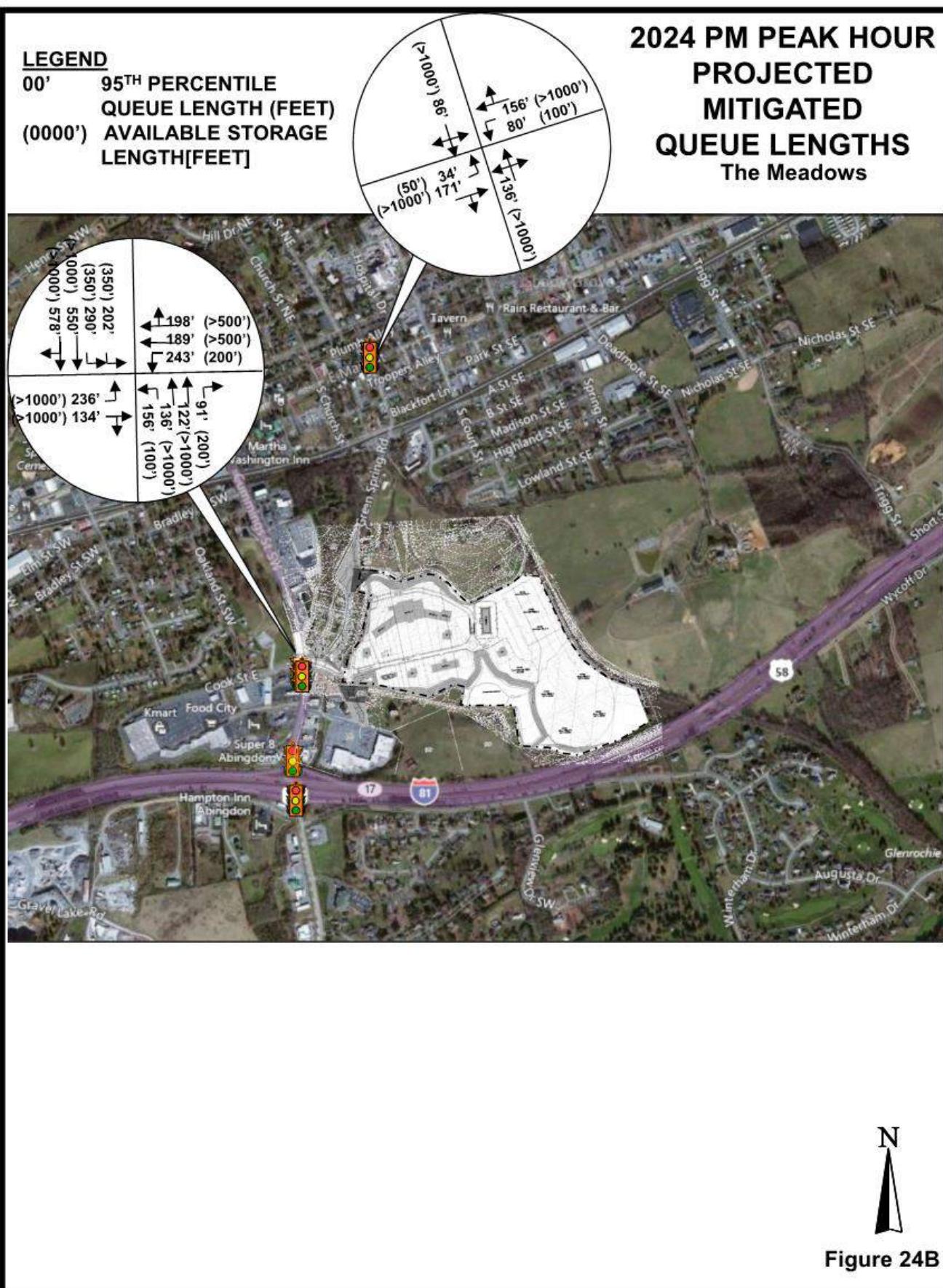


Table 9 Detailed Intersection Level of Service Summary

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)									
		Cook St.		Green Springs Dr.		Cummings St.			Cummings St.		
		Eastbound		Westbound		Northbound			Southbound		
		LT	TH-RT	LT	TH-RT	LT	TH	RT	LT	TH-RT	
AM Peak Hour											
2015	Existing	A	B	B			A	A			A
		(7.4)	(16.5)	(15.8)			(3.9)	(4.3)			(9.7)
			B (16.1)				A (4.2)			A (9.5)	
2018	Background	B	D	D	D	D	A	A	A	A	B
		(13.6)	(38.6)	(44.3)	(42.7)	(46.9)	(5.2)	(8.9)	(7.7)	(9.3)	(10.7)
			D (41.9)		D (44.1)		A (8.3)			B (10.6)	
2024	Background	B	D	D	D	D	A	A	A	A	A
		(14.5)	(47.7)	(52.8)	(51.0)	(53.8)	(5.0)	(9.0)	(7.8)	(6.6)	(9.8)
			D (50.7)		D (51.9)		A (8.3)			A (9.6)	
2018	Buildout	C	D	E	D	D	B	B	B	B	B
		(24.2)	(54.8)	(56.8)	(50.9)	(46.6)	(11.5)	(18.1)	(18.1)	(10.6)	(14.2)
			E (56.0)		D (48.7)		B (17.4)			B (12.8)	
2018	Buildout MIT	C	D	E	E	E	A	A	A	B	B
		(20.7)	(52.0)	(62.8)	(71.3)	(62.7)	(4.1)	(4.8)	(0.1)	(12.5)	(12.2)
			E (58.2)		E (66.9)		A (2.9)			B (12.3)	
2024	Buildout	C	D	E	D	D	B	B	B	B	B
		(24.5)	(55.1)	(56.9)	(52.0)	(46.5)	(11.6)	(18.5)	(18.3)	(11.3)	(14.5)
			E (56.1)		D (49.2)		B (17.8)			B (13.3)	
2024	Buildout MIT	C	E	E	E	E	A	A	A	B	B
		(20.2)	(61.6)	(67.8)	(55.7)	(56.3)	(5.2)	(5.6)	(1.3)	(15.3)	(14.1)
			E (65.2)		E (56.0)		A (3.9)			B (14.6)	
PM Peak Hour											
2015	Existing	B	D	B			A	A			B
		(12.4)	(46.3)	(13.3)			(6.3)	(5.0)			(18.4)
			B (14.7)				A (5.4)			B (16.7)	
2018	Background	C	E	D	D	D	B	B	B	B	B
		(23.3)	(60.0)	(41.3)	(47.5)	(47.0)	(12.3)	(12.5)	(11.1)	(10.5)	(19.2)
			D (50.0)		D (47.2)		B (12.2)			B (18.7)	
2024	Background	C	E	D	D	D	B	B	B	B	C
		(24.9)	(77.1)	(37.9)	(43.1)	(42.1)	(13.6)	(12.2)	(10.8)	(10.7)	(20.5)
			E (56.1)		D (42.4)		B (12.4)			B (20.1)	
2018	Buildout	D	E	E	E	D	C	C	C	B	C
		(36.0)	(71.0)	(63.6)	(57.6)	(52.6)	(21.6)	(28.2)	(28.4)	(17.2)	(24.5)
			E (67.0)		D (55.0)		C (27.0)			C (22.0)	
2018	Buildout MIT	C	E	E	D	D	B	A	A	C	C
		(31.0)	(65.7)	(63.0)	(51.8)	(51.5)	(14.0)	(9.9)	(4.8)	(24.1)	(27.9)
			E (64.3)		D (51.6)		A (8.7)			C (26.6)	
2024	Buildout	C	D	D	D	D	C	C	C	B	C
		(31.9)	(45.5)	(43.2)	(54.2)	(38.7)	(21.6)	(29.5)	(28.1)	(16.9)	(27.1)
			D (44.3)		D (45.9)		C (27.3)			C (23.7)	
2024	Buildout MIT	C	E	E	D	D	B	A	A	C	C
		(30.5)	(63.7)	(58.6)	(53.6)	(49.8)	(13.6)	(8.7)	(0.6)	(25.7)	(30.2)
			E (61.0)		D (51.6)		A (6.6)			C (28.7)	

**Table 9 Detailed Intersection Level of Service Summary
(Continued)**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)					
		I-81 SB Off Ramp		Cummings St.		Cummings St.	
		Westbound		Northbound		Southbound	
		LT	RT	LT	TH	TH	RT
AM Peak Hour							
2015	Existing	C	D	D	B	D	B
		(32.0)	(41.1)	(39.1)	(16.7)	(41.0)	(19.8)
			D (39.4)		D (36.5)		B (18.5)
2018	Background	C	D	D	A	B	F
		(25.6)	(44.7)	(42.8)	(7.4)	(19.4)	(239.0)
			D (43.1)		B (17.2)		C (22.3)
2024	Background	C	D	D	A	C	C
		(28.9)	(54.4)	(51.8)	(8.1)	(21.2)	(24.1)
			D (52.2)		B (18.8)		C (22.6)
2018	Buildout	D	E	E	B	D	C
		(36.8)	(60.5)	(57.2)	(16.4)	(36.6)	(27.2)
			E (57.7)		C (33.4)		C (25.2)
2024	Buildout	D	E	E	A	D	C
		(38.0)	(62.6)	(57.6)	(10.0)	(39.5)	(28.5)
			E (58.3)		C (34.8)		C (26.3)
PM Peak Hour							
2015	Existing	C	D	D	B	C	C
		(30.7)	(43.3)	(38.5)	(17.8)	(32.8)	(32.5)
			D (39.6)		C (30.7)		C (27.1)
2018	Background	C	D	D	C	B	
		(28.2)	(51.0)	(46.4)	(24.6)	(18.6)	(30.6)
			D (47.5)		B (19.4)		C (26.3)
2024	Background	C	D	D	C	C	B
		(29.4)	(51.2)	(42.9)	(30.9)	(20.4)	(33.8)
			D (44.9)		C (21.9)		C (28.1)
2018	Buildout	D	E	E	E	D	C
		(41.7)	(77.6)	(61.9)	(56.6)	(35.5)	(42.3)
			E (65.1)		D (37.8)		D (35.7)
2024	Buildout	D	E	D	D	E	C
		(53.1)	(59.5)	(44.2)	(37.4)	(72.7)	(59.9)
			D (47.3)		E (68.7)		D (44.6)

**Table 9 Detailed Intersection Level of Service Summary
(Continued)**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)						
		I-81 NB Off Ramp		Cummings St.		Cummings St.		
		Eastbound		Northbound		Southbound		
		LT	RT	TH	RT	LT	TH	
AM Peak Hour								
2015	Existing	D	F	C	C	B	C	A
		(38.3)	(90.7)	(32.8)	(35.1)	(19.9)	(21.2)	(7.8)
			E	(74.3)	C (31.7)		B (13.3)	
2018	Background	C	E	C	C	B	B	B
		(31.7)	(61.9)	(34.2)	(29.7)	(18.6)	(16.4)	(13.6)
			D	(54.0)	C (27.2)		B (14.8)	
2024	Background	C	E	D	C	C	C	B
		(34.1)	(66.5)	(39.9)	(31.9)	(20.5)	(21.4)	(14.4)
			E	(58.9)	C (29.4)		B (17.3)	
2018	Buildout	D	F	D	C	C	B	A
		(38.8)	(89.0)	(40.8)	(31.6)	(20.2)	(18.8)	(8.4)
			E	(78.0)	C (29.3)		B (12.9)	
2024	Buildout	D	F	D	D	C	D	B
		(42.1)	(85.4)	(39.7)	(35.3)	(21.0)	(35.8)	(14.4)
			E	(74.9)	C (32.4)		C (23.6)	
PM Peak Hour								
2015	Existing	C	E	C	C	B	B	A
		(27.7)	(69.8)	(32.3)	(27.6)	(19.9)	(14.7)	(9.4)
			D	(54.0)	C (25.8)		B (11.5)	
2018	Background	C	E	D	C	C	A	B
		(26.0)	(61.3)	(37.6)	(27.2)	(25.5)	(7.4)	(11.0)
			D	(51.4)	C (25.6)		A (9.6)	
2024	Background	C	E	C	C	B	A	B
		(27.1)	(68.1)	(34.5)	(27.1)	(19.6)	(8.9)	(11.8)
			D	(54.0)	C (25.3)		B (10.6)	
2018	Buildout	D	F	D	C	C	B	B
		(35.8)	(87.0)	(42.7)	(31.4)	(22.9)	(17.4)	(11.2)
			E	(72.3)	C (29.6)		B (13.7)	
2024	Buildout	D	F	C	C	B	C	B
		(44.3)	(129.2)	(32.5)	(31.1)	(20.0)	(23.7)	(13.6)
			F	(96.5)	C (28.8)		B (17.7)	

**Table 9 Detailed Intersection Level of Service Summary
(Continued)**

Scenario		Level of Service per Movement by Approach (Delay in sec/veh)					
		Country Club Dr.		Cummings St.		Cummings St.	
		Westbound		Northbound		Southbound	
		LT	RT	TH	RT	LT	TH
AM Peak Hour							
2015	Existing	C	B	A		A	
		(17.8)	(13.1)	(0.0)		(1.5)	
		B	(13.7)	A (0.0)		A (1.5)	
2018	Background	C	B	A		A	
		(18.3)	(13.3)	(0.0)		(1.5)	
		B	(14.0)	A (0.0)		A (1.5)	
2024	Background	C	B	A		A	
		(19.7)	(13.9)	(0.0)		(1.6)	
		B	(14.7)	A (0.0)		A (1.6)	
2018	Buildout	C	B	A		A	
		(20.3)	(14.1)	(0.0)		(2.0)	
		B	(14.8)	A (0.0)		A (2.0)	
2024	Buildout	C	B	A		A	
		(21.9)	(14.8)	(0.0)		(2.1)	
		C	(15.6)	A (0.0)		A (2.1)	
PM Peak Hour							
2015	Existing	C	B	A		A	
		(23.3)	(11.3)	(0.0)		(1.7)	
		B	(12.7)	A (0.0)		A (1.7)	
2018	Background	C	B	A		A	
		(24.4)	(11.5)	(0.0)		(1.7)	
		B	(12.9)	A (0.0)		A (1.7)	
2024	Background	D	B	A		A	
		(27.4)	(11.8)	(0.0)		(1.8)	
		B	(13.6)	A (0.0)		A (1.8)	
2018	Buildout	D	B	A		A	
		(29.3)	(12.1)	(0.0)		(2.2)	
		B	(13.6)	A (0.0)		A (2.2)	
2024	Buildout	D	B	A		A	
		(33.9)	(12.5)	(0.0)		(2.3)	
		B	(14.4)	A (0.0)		A (2.3)	

**Table 9 Detailed Intersection Level of Service Summary
(Continued)**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
		E. Main St.			E. Main St.			Green Springs Rd.			Pecan St.		
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour													
2015	Existing	A	A		A			A			A		
		(6.7)	(5.7)		(5.9)			(9.9)			(9.5)		
			A (5.7)		A (5.9)			A (9.9)			A (9.5)		
2018	Background	A	A		A			B			A		
		(6.9)	(5.9)		(6.1)			(10.1)			(9.6)		
			A (5.9)		A (6.1)			B (10.1)			A (9.6)		
2024	Background	A	A		A			B			A		
		(7.1)	(6.0)		(6.3)			(10.2)			(9.6)		
			A (6.0)		A (6.3)			B (10.2)			A (9.6)		
2018	Buildout	A	A		A			B			B		
		(7.9)	(5.0)		(5.7)			(14.6)			(13.4)		
			A (5.0)		A (5.7)			B (14.6)			B (13.4)		
2018	Buildout MIT	A	A	A	A	A		B			B		
		(7.1)	(4.7)	(5.8)	(5.2)	(6.0)		(10.5)			(9.7)		
				A (5.8)		A (5.8)		B (10.5)			A (9.7)		
2024	Buildout	A	A		A			B			B		
		(8.7)	(6.4)		(7.6)			(13.2)			(12.1)		
			A (6.4)		A (7.6)			B (13.2)			B (12.1)		
2024	Buildout MIT	A	A	A	A	A		B			A		
		(7.2)	(4.7)	(5.9)	(5.2)	(6.1)		(10.6)			(9.7)		
				A (5.9)		A (5.9)		B (10.6)			A (9.7)		
PM Peak Hour													
2015	Existing	A	A		A			B			B		
		(7.2)	(5.9)		(5.4)			(13.7)			(13.2)		
			A (5.9)		A (5.4)			B (13.7)			B (13.2)		
2018	Background	A	A		A			B			B		
		(7.7)	(6.2)		(5.6)			(15.2)			(14.2)		
			A (6.2)		A (5.6)			B (15.2)			B (14.2)		
2024	Background	A	A		A			B			B		
		(8.0)	(6.5)		(5.7)			(15.8)			(14.7)		
			A (6.5)		A (5.7)			B (15.8)			B (14.7)		
2018	Buildout	B	A		A			B			B		
		(10.2)	(7.9)		(9.4)			(15.3)			(13.8)		
			A (7.9)		A (9.4)			B (15.3)			B (13.8)		
2018	Buildout MIT	A	A	A	A	A		B			B		
		(8.1)	(4.7)	(7.8)	(5.8)	(6.5)		(11.4)			(10.3)		
				A (7.7)		A (6.4)		B (11.4)			B (10.3)		
2024	Buildout	B	A		B			B			B		
		(10.8)	(8.5)		(10.2)			(15.7)			(14.0)		
			A (8.5)		B (10.2)			B (15.7)			B (14.0)		
2024	Buildout MIT	A	A	A	A	A		B			B		
		(8.6)	(4.7)	(8.5)	(5.9)	(6.8)		(12.0)			(10.4)		
				A (8.4)		A (6.6)		B (12.0)			B (10.4)		

**Table 9 Detailed Intersection Level of Service Summary
(Continued)**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)										
		I-81 NB OFF RAMP			Country Club Dr.			Cummings St.		Cummings St.		
		Eastbound			Westbound			Northbound		Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH
AM Peak Hour												
2024 Background	C	D		C	C			B	C	B	A	A
	(22.2)	(45.5)		(22.3)	(22.3)			(10.9)	(20.2)	(10.6)	(8.5)	(6.8)
		D	(38.9)		C	(22.3)		B	(19.9)		A	(7.0)
2024 Buildout	C	D		B	B			B	C	B	B	A
	(26.9)	(52.3)		(18.7)	(18.7)			(12.9)	(26.8)	(12.4)	(10.4)	(7.5)
		D	(44.6)		B	(18.7)		C	(26.4)		A	(7.9)
PM Peak Hour												
2024 Background	B	D		C	C			B	B	B	A	A
	(18.9)	(43.3)		(22.8)	(22.3)			(12.8)	(16.0)	(10.6)	(5.9)	(9.6)
		C	(34.6)		C	(22.3)		B	(15.8)		A	(9.2)
2024 Buildout	C	E		B	B			B	C	B	A	B
	(26.1)	(75.3)		(17.7)	(17.3)			(16.9)	(25.1)	(14.0)	(6.7)	(12.0)
		E	(55.8)		B	(17.3)		C	(24.8)		B	(11.3)

RECOMMENDATIONS

The projected traffic volumes and the analyses conducted identified the following recommendations:

- Realign Green Springs Road with Cook Street at Cummings Street.
- Provide a minimum 575 foot southbound left-turn lane or 325-foot double left-turn lanes from Cummings Street to realigned Green Springs Road and the proposed site.
- Provide a minimum 350-foot northbound right-turn lane from Cummings Street to realigned Green Springs Road and the proposed site.
- Consider a 100-foot westbound left-turn lane from E. Main Street to Pecan Street and the proposed site.
- Provide a 100'foot eastbound left-turn lane from the realigned Green Springs Road to northbound Green Springs Road.
- Consider 300-foot double left-turn lanes from the realigned northbound I-81 off-ramp.
- Construct the proposed alternate interchange providing the I-81 northbound loop on-ramp and increased separation of I-81 interchange northbound and southbound ramps.
- Minimize signing and vegetation at the proposed site accesses as not to restrict sight-distances for traffic egressing the site.

Signal and geometric improvements should meet minimum standards established by the American Association of State Transportation and Highway Officials (AASHTO), Institute of Transportation Engineers (ITE), Virginia Department of Transportation (VDOT), and Town of Abingdon.

CONCLUSION

This study of The Meadows development was commissioned to determine its impact on the Town of Abingdon's current transportation system. The Meadows development site is located in the northeast quadrant of Exit 17 bounded by I-81 and Green Springs Road. This assessment is concurrent with a Cummings Street corridor and I-81 interchange study commissioned by VDOT in 2015. Using the turning movement data and proposed rate growth from a corridor study and the trip generation for this site, traffic was projected with and without the proposed development. Background traffic, traffic that may be anticipated regardless of the proposed development, was determined using a 3.0-percent growth for the assumed buildout year of 2018 and a 9.4 percent growth the horizon year of 2024. Traffic associated with the proposed project was then generated and distributed to the adjacent transportation system. Using the identified turning movements for the existing and projected traffic conditions, capacity and level of service analyses were conducted using the **2010 Highway Capacity Manual**.

The study estimated traffic for the proposed development with 60,000 square-foot grocery with 10 pump fuel services, 42,500 square-foot ancillary shops, four high-turnover sit-down restaurants totaling 26,000 square feet, a 2,500 square-foot assumed coffee drive-thru, and two hotels with a total of 200 rooms. From the trip generation calculations, the proposed site may generate approximately 17,380 weekday daily trips. After the consideration of pass-by and shared trips, approximately 12,690 new weekday daily trips would be generated. These trips were distributed to the transportation system based on its community size and highway oriented commercial development.

With traffic projection developed for 2018 and 2024 buildout and horizon years with and without the proposed development, analyses conducted found that the existing I-81 interchange experiences a F LOS for the northbound left-turn lane, and the spacing between northbound and southbound ramps results in adverse queuing. These conditions continue for background and projected conditions. With the proposed improvements of the interchange and the realignment of Green Springs Road with Cummings Street at Cook Street, access for the site is very good with study intersections operating at acceptable levels of service.

APPENDIX

**Trip Generation
Synchro Analyses
SimTraffic Analyses**

TRIP GENERATION

23-Nov-15

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2605	2701	2667	2620	2586	2579	2731
Vehs Exited	2595	2711	2638	2594	2576	2584	2722
Starting Vehs	137	157	120	137	128	145	160
Ending Vehs	147	147	149	163	138	140	169
Denied Entry Before	31	74	72	75	83	5	79
Denied Entry After	127	189	160	126	140	74	178
Travel Distance (mi)	1804	1872	1825	1795	1788	1787	1901
Travel Time (hr)	208.6	296.3	265.2	236.1	243.2	175.7	281.0
Total Delay (hr)	150.5	235.9	206.3	178.4	185.8	118.3	219.7
Total Stops	3182	3269	3105	3088	3030	3005	3133
Fuel Used (gal)	95.6	117.8	108.9	101.7	103.1	87.4	114.7

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2657	2629	2589	2634
Vehs Exited	2653	2636	2557	2625
Starting Vehs	141	145	155	137
Ending Vehs	145	138	187	150
Denied Entry Before	34	0	28	48
Denied Entry After	135	66	99	129
Travel Distance (mi)	1849	1843	1754	1822
Travel Time (hr)	219.6	188.4	214.5	232.9
Total Delay (hr)	160.0	129.0	158.2	174.2
Total Stops	3186	3210	3067	3130
Fuel Used (gal)	99.9	92.7	95.7	101.8

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

SimTraffic Simulation Summary

Existing AM Peak

11/22/2015

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2605	2701	2667	2620	2586	2579	2731
Vehs Exited	2595	2711	2638	2594	2576	2584	2722
Starting Vehs	137	157	120	137	128	145	160
Ending Vehs	147	147	149	163	138	140	169
Denied Entry Before	31	74	72	75	83	5	79
Denied Entry After	127	189	160	126	140	74	178
Travel Distance (mi)	1804	1872	1825	1795	1788	1787	1901
Travel Time (hr)	208.6	296.3	265.2	236.1	243.2	175.7	281.0
Total Delay (hr)	150.5	235.9	206.3	178.4	185.8	118.3	219.7
Total Stops	3182	3269	3105	3088	3030	3005	3133
Fuel Used (gal)	95.6	117.8	108.9	101.7	103.1	87.4	114.7

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	2657	2629	2589	2634
Vehs Exited	2653	2636	2557	2625
Starting Vehs	141	145	155	137
Ending Vehs	145	138	187	150
Denied Entry Before	34	0	28	48
Denied Entry After	135	66	99	129
Travel Distance (mi)	1849	1843	1754	1822
Travel Time (hr)	219.6	188.4	214.5	232.9
Total Delay (hr)	160.0	129.0	158.2	174.2
Total Stops	3186	3210	3067	3130
Fuel Used (gal)	99.9	92.7	95.7	101.8

1: Cook St & Cummings St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.1	0.1
Total Delay (hr)	0.2	0.1	0.2	0.5	0.8	0.1	1.9
Total Del/Veh (s)	12.9	4.4	5.7	2.9	7.1	3.9	4.9
Stop Delay (hr)	0.2	0.1	0.1	0.3	0.4	0.0	1.1
Stop Del/Veh (s)	10.9	3.7	4.2	1.4	3.6	2.4	2.9
Total Stops	53	82	56	128	144	29	492
Stop/Veh	0.79	0.82	0.58	0.19	0.36	0.46	0.35
Travel Dist (mi)	15.3	23.1	3.3	21.5	173.6	27.3	264.1
Travel Time (hr)	0.7	0.9	0.3	1.2	5.8	0.9	9.8
Avg Speed (mph)	21	26	11	18	30	30	27
Fuel Used (gal)	0.5	0.6	0.1	1.0	4.8	0.7	7.8
Fuel Eff. (mpg)	34.0	36.5	29.4	21.1	35.8	38.2	33.9
HC Emissions (g)	3	7	1	12	47	7	76
CO Emissions (g)	106	203	21	487	1191	171	2178
NOx Emissions (g)	11	24	3	42	164	24	268
Vehicles Entered	66	100	97	658	393	62	1376
Vehicles Exited	66	100	97	658	396	62	1379
Hourly Exit Rate	66	100	97	658	396	62	1379
Input Volume	68	93	107	704	393	62	1427
% of Volume	97	108	91	93	101	100	97
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

2: Cummings St. & Green Springs Rd. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.1	0.1	0.6	0.1	0.1	0.3	1.3
Total Del/Veh (s)	20.0	7.1	3.0	2.8	11.4	1.9	3.1
Stop Delay (hr)	0.1	0.1	0.1	0.0	0.1	0.1	0.4
Stop Del/Veh (s)	18.4	6.9	0.3	0.3	9.5	0.6	1.0
Total Stops	20	40	1	2	20	16	99
Stop/Veh	1.00	1.00	0.00	0.01	0.74	0.03	0.07
Travel Dist (mi)	1.1	2.2	119.6	28.9	1.0	17.6	170.5
Travel Time (hr)	0.2	0.2	4.4	1.2	0.1	0.9	6.9
Avg Speed (mph)	7	12	27	24	7	20	25
Fuel Used (gal)	0.0	0.1	5.4	1.1	0.1	1.3	8.0
Fuel Eff. (mpg)	26.2	37.4	22.2	25.2	18.1	13.7	21.4
HC Emissions (g)	0	0	76	19	0	18	113
CO Emissions (g)	3	8	3263	704	9	782	4770
NOx Emissions (g)	0	1	256	61	1	66	386
Vehicles Entered	20	40	715	173	27	479	1454
Vehicles Exited	20	40	714	173	27	479	1453
Hourly Exit Rate	20	40	714	173	27	479	1453
Input Volume	19	38	773	183	24	473	1510
% of Volume	105	105	92	95	112	101	96
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.3	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	0.8	1.2	0.6	4.3	1.3	0.2	8.5
Total Del/Veh (s)	42.4	11.7	19.8	29.4	15.8	3.5	19.2
Stop Delay (hr)	0.7	1.0	0.5	3.4	1.0	0.1	6.7
Stop Del/Veh (s)	39.3	9.4	15.0	23.5	11.7	2.6	15.3
Total Stops	60	325	105	291	137	106	1024
Stop/Veh	0.91	0.89	0.89	0.55	0.46	0.53	0.65
Travel Dist (mi)	9.9	55.9	7.9	34.3	49.4	33.9	191.4
Travel Time (hr)	1.1	3.2	1.0	5.4	2.8	1.4	14.9
Avg Speed (mph)	9	18	8	6	18	25	13
Fuel Used (gal)	0.5	1.8	0.4	2.5	1.8	0.9	7.9
Fuel Eff. (mpg)	20.3	31.1	17.7	14.0	27.9	36.6	24.2
HC Emissions (g)	2	20	3	19	18	11	73
CO Emissions (g)	148	837	107	599	638	373	2703
NOx Emissions (g)	9	61	14	71	58	32	245
Vehicles Entered	64	365	118	521	298	199	1565
Vehicles Exited	65	364	118	521	298	199	1565
Hourly Exit Rate	65	364	118	521	298	199	1565
Input Volume	69	366	132	585	286	205	1643
% of Volume	94	99	89	89	104	97	95
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	6.2	0.1	1.9	0.2	0.6	0.6	9.4
Total Del/Veh (s)	86.6	4.8	17.3	4.9	14.0	9.9	28.1
Stop Delay (hr)	5.6	0.1	1.6	0.1	0.4	0.4	8.3
Stop Del/Veh (s)	79.3	4.5	14.5	3.9	10.6	6.7	24.6
Total Stops	298	77	122	113	99	60	769
Stop/Veh	1.16	0.79	0.31	1.00	0.70	0.29	0.64
Travel Dist (mi)	36.7	14.4	9.3	2.5	9.3	13.4	85.7
Travel Time (hr)	7.4	0.7	2.2	0.3	0.9	1.0	12.4
Avg Speed (mph)	5	22	4	8	10	14	7
Fuel Used (gal)	2.7	0.4	0.9	0.1	0.5	0.8	5.5
Fuel Eff. (mpg)	13.6	35.2	9.9	16.8	19.1	17.5	15.7
HC Emissions (g)	19	6	8	1	4	7	44
CO Emissions (g)	825	173	212	34	140	320	1704
NOx Emissions (g)	55	17	31	6	16	30	155
Vehicles Entered	248	97	390	113	142	206	1196
Vehicles Exited	249	97	390	113	141	207	1197
Hourly Exit Rate	249	97	390	113	141	207	1197
Input Volume	246	97	470	134	141	198	1286
% of Volume	101	100	83	84	100	105	93
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	15.2	1.3	0.0	2.6	0.1	0.0	19.3
Total Del/Veh (s)	2023.8	1206.2	15.4	19.1	1.7	0.8	82.9
Stop Delay (hr)	15.2	1.3	0.0	2.3	0.1	0.0	18.9
Stop Del/Veh (s)	2024.9	1204.5	14.4	16.7	0.7	0.6	81.3
Total Stops	12	5	1	169	11	1	199
Stop/Veh	0.44	1.25	0.33	0.34	0.04	0.04	0.24
Travel Dist (mi)	0.9	0.2	0.1	9.6	6.2	0.6	17.7
Travel Time (hr)	15.2	1.3	0.0	3.0	0.4	0.0	20.0
Avg Speed (mph)	0	0	3	3	16	13	1
Fuel Used (gal)	3.5	0.3	0.0	1.2	0.4	0.0	5.4
Fuel Eff. (mpg)	0.3	0.7	8.3	8.3	15.0	24.6	3.3
HC Emissions (g)	0	0	0	10	5	0	15
CO Emissions (g)	168	16	1	220	171	8	583
NOx Emissions (g)	1	0	0	33	21	1	55
Vehicles Entered	16	4	3	494	275	28	820
Vehicles Exited	9	2	3	494	275	28	811
Hourly Exit Rate	9	2	3	494	275	28	811
Input Volume	22	6	4	582	269	25	908
% of Volume	41	33	75	85	102	112	89
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	84.7	2.0	0.0	0.0	86.8
Denied Del/Veh (s)	0.0	0.0	563.9	614.5	0.0	0.0	337.8
Total Delay (hr)	0.0	1.4	38.8	1.0	0.0	0.1	41.3
Total Del/Veh (s)	11.1	60.5	303.6	292.5	5.0	0.9	176.1
Stop Delay (hr)	0.0	1.4	38.7	1.0	0.0	0.0	41.2
Stop Del/Veh (s)	8.6	60.2	303.1	294.8	3.6	0.3	175.6
Total Stops	12	52	132	2	14	7	219
Stop/Veh	1.00	0.63	0.29	0.17	0.40	0.03	0.26
Travel Dist (mi)	1.0	7.1	78.7	2.0	0.8	5.5	95.1
Travel Time (hr)	0.1	1.7	125.8	3.1	0.1	0.2	130.9
Avg Speed (mph)	14	4	2	2	9	23	2
Fuel Used (gal)	0.0	0.4	30.0	0.7	0.0	0.4	31.7
Fuel Eff. (mpg)	39.7	16.6	2.6	2.6	22.9	13.8	3.0
HC Emissions (g)	0	2	99	0	0	6	107
CO Emissions (g)	4	51	2779	40	10	297	3181
NOx Emissions (g)	0	4	109	1	1	21	137
Vehicles Entered	12	81	415	10	35	244	797
Vehicles Exited	12	81	416	10	35	243	797
Hourly Exit Rate	12	81	416	10	35	243	797
Input Volume	12	78	508	11	37	239	885
% of Volume	100	104	82	91	95	102	90
Denied Entry Before	0	0	47	1	0	0	48
Denied Entry After	0	0	126	2	0	0	128

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.3	0.2	0.2	0.3	0.3	0.0	0.0	0.0	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.5	4.6	2.5	8.6	5.0	3.2	12.4	5.0	5.6	12.0	9.9	5.0
Stop Delay (hr)	0.0	0.2	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Stop Del/Veh (s)	4.3	2.7	1.4	5.8	2.6	2.3	10.4	3.9	4.7	10.4	8.2	4.6
Total Stops	0	87	3	5	96	0	18	30	48	12	8	6
Stop/Veh	0.00	0.31	0.33	0.62	0.30	0.00	0.75	0.27	0.73	0.80	0.62	0.75
Travel Dist (mi)	0.3	59.2	1.9	2.2	89.5	0.5	2.9	9.5	7.9	1.0	0.9	0.6
Travel Time (hr)	0.0	2.8	0.1	0.1	4.1	0.0	0.2	0.5	0.5	0.1	0.1	0.0
Avg Speed (mph)	21	22	22	20	22	22	14	18	17	11	12	15
Fuel Used (gal)	0.0	1.8	0.1	0.1	2.7	0.0	0.1	0.3	0.2	0.0	0.0	0.0
Fuel Eff. (mpg)	31.2	32.6	34.9	33.1	32.9	31.9	32.0	33.7	36.0	29.0	25.9	32.0
HC Emissions (g)	0	13	0	0	20	0	1	2	1	0	0	0
CO Emissions (g)	1	320	5	6	467	1	21	44	33	4	6	3
NOx Emissions (g)	0	44	1	1	67	0	3	6	4	0	1	0
Vehicles Entered	1	273	9	8	319	2	24	113	65	15	13	8
Vehicles Exited	1	274	9	8	319	2	24	112	65	15	13	8
Hourly Exit Rate	1	274	9	8	319	2	24	112	65	15	13	8
Input Volume	2	270	8	9	312	1	27	117	63	18	13	8
% of Volume	50	101	112	89	102	200	89	96	103	83	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.2
Total Delay (hr)	1.3
Total Del/Veh (s)	5.3
Stop Delay (hr)	0.8
Stop Del/Veh (s)	3.5
Total Stops	313
Stop/Veh	0.37
Travel Dist (mi)	176.3
Travel Time (hr)	8.5
Avg Speed (mph)	21
Fuel Used (gal)	5.4
Fuel Eff. (mpg)	32.9
HC Emissions (g)	37
CO Emissions (g)	912
NOx Emissions (g)	128
Vehicles Entered	850
Vehicles Exited	850
Hourly Exit Rate	850
Input Volume	848
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

Total Network Performance

Total Network Performance	
Denied Delay (hr)	87.0
Denied Del/Veh (s)	113.3
Total Delay (hr)	87.2
Total Del/Veh (s)	113.1
Stop Delay (hr)	80.7
Stop Del/Veh (s)	104.7
Total Stops	3130
Stop/Veh	1.13
Travel Dist (mi)	1821.7
Travel Time (hr)	232.9
Avg Speed (mph)	12
Fuel Used (gal)	101.8
Fuel Eff. (mpg)	17.9
HC Emissions (g)	829
CO Emissions (g)	28513
NOx Emissions (g)	2602
Vehicles Entered	2634
Vehicles Exited	2625
Hourly Exit Rate	2625
Input Volume	12679
% of Volume	21
Denied Entry Before	48
Denied Entry After	129

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	303.6	984.5	0.2	2
Commerce St.	7	12.3	14.4	0.0	5
Total		315.9	998.9	0.2	2

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	0.9	3.5	0.0	21
Total		0.9	3.5	0.0	21

Queuing and Blocking Report

Existing AM Peak

11/22/2015

Intersection: 1: Cook St & Cummings St.

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	TR
Maximum Queue (ft)	70	69	72	89	117	116	107
Average Queue (ft)	32	34	33	29	53	50	46
95th Queue (ft)	61	58	64	72	98	96	87
Link Distance (ft)	1222	1222		122	122	2325	2325
Upstream Blk Time (%)				0	0		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (ft)			100				
Storage Blk Time (%)			0	0			
Queuing Penalty (veh)			0	0			

Intersection: 2: Cummings St. & Green Springs Rd.

Movement	WB	NB	SB	SB
Directions Served	LR	TR	LT	T
Maximum Queue (ft)	77	32	104	66
Average Queue (ft)	32	2	27	3
95th Queue (ft)	61	14	79	28
Link Distance (ft)	358	839	122	122
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	106	182	174	293	212	90
Average Queue (ft)	44	89	82	190	95	38
95th Queue (ft)	90	151	180	266	173	70
Link Distance (ft)	808	808		278	839	839
Upstream Blk Time (%)				1		
Queuing Penalty (veh)				6		
Storage Bay Dist (ft)			75			
Storage Blk Time (%)			3	50		
Queuing Penalty (veh)			15	65		

Queuing and Blocking Report

Existing AM Peak

11/22/2015

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	385	69	97	58	112	118
Average Queue (ft)	219	25	73	45	46	44
95th Queue (ft)	386	50	87	64	88	96
Link Distance (ft)	776	776	58			278
Upstream Blk Time (%)			57	2		
Queuing Penalty (veh)			347	0		
Storage Bay Dist (ft)				50	100	
Storage Blk Time (%)			59	3	1	0
Queuing Penalty (veh)			80	15	1	1

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	198	446	181	117	74
Average Queue (ft)	180	339	78	92	12
95th Queue (ft)	222	600	251	111	51
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		58	4	63	1
Queuing Penalty (veh)		0	0	369	4
Storage Bay Dist (ft)		100			
Storage Blk Time (%)		97			
Queuing Penalty (veh)		6			

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	62	158	1060	62
Average Queue (ft)	11	66	1023	19
95th Queue (ft)	50	171	1044	58
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)			99	2
Queuing Penalty (veh)			0	6
Storage Bay Dist (ft)		75		
Storage Blk Time (%)		21		
Queuing Penalty (veh)		2		

Queuing and Blocking Report

Existing AM Peak

11/22/2015

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	124	132	103	57
Average Queue (ft)	54	58	49	20
95th Queue (ft)	104	108	85	48
Link Distance (ft)	1139	1479	599	358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 917

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3555	3614	3632	3610	3581	3576	3651
Vehs Exited	3568	3616	3638	3609	3569	3591	3662
Starting Vehs	134	115	109	111	116	135	116
Ending Vehs	121	113	103	112	128	120	105
Denied Entry Before	0	0	0	0	0	0	1
Denied Entry After	0	0	0	0	0	0	0
Travel Distance (mi)	2392	2450	2429	2426	2403	2432	2442
Travel Time (hr)	115.8	117.0	118.2	118.2	111.6	124.6	113.2
Total Delay (hr)	38.2	37.8	39.6	39.9	34.2	46.0	34.2
Total Stops	4365	4342	4512	4571	4346	4476	4331
Fuel Used (gal)	90.8	92.6	92.7	92.6	90.7	94.0	92.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3555	3608	3545	3593
Vehs Exited	3543	3597	3557	3594
Starting Vehs	105	107	119	109
Ending Vehs	117	118	107	109
Denied Entry Before	0	0	0	0
Denied Entry After	0	2	1	0
Travel Distance (mi)	2392	2441	2395	2420
Travel Time (hr)	109.6	117.6	114.3	116.0
Total Delay (hr)	32.4	38.7	36.9	37.8
Total Stops	4277	4595	4387	4423
Fuel Used (gal)	90.1	93.2	90.6	92.0

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

SimTraffic Simulation Summary

Existing PM Peak

11/22/2015

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3555	3614	3632	3610	3581	3576	3651
Vehs Exited	3568	3616	3638	3609	3569	3591	3662
Starting Vehs	134	115	109	111	116	135	116
Ending Vehs	121	113	103	112	128	120	105
Denied Entry Before	0	0	0	0	0	0	1
Denied Entry After	0	0	0	0	0	0	0
Travel Distance (mi)	2392	2450	2429	2426	2403	2432	2442
Travel Time (hr)	115.8	117.0	118.2	118.2	111.6	124.6	113.2
Total Delay (hr)	38.2	37.8	39.6	39.9	34.2	46.0	34.2
Total Stops	4365	4342	4512	4571	4346	4476	4331
Fuel Used (gal)	90.8	92.6	92.7	92.6	90.7	94.0	92.5

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3555	3608	3545	3593
Vehs Exited	3543	3597	3557	3594
Starting Vehs	105	107	119	109
Ending Vehs	117	118	107	109
Denied Entry Before	0	0	0	0
Denied Entry After	0	2	1	0
Travel Distance (mi)	2392	2441	2395	2420
Travel Time (hr)	109.6	117.6	114.3	116.0
Total Delay (hr)	32.4	38.7	36.9	37.8
Total Stops	4277	4595	4387	4423
Fuel Used (gal)	90.1	93.2	90.6	92.0

1: Cook St & Cummings St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.1	0.2	0.1
Total Delay (hr)	1.1	0.4	0.5	0.5	2.7	0.7	6.0
Total Del/Veh (s)	20.2	6.6	8.9	3.8	15.8	11.3	11.0
Stop Delay (hr)	0.9	0.3	0.4	0.3	1.7	0.5	4.0
Total Stops	166	173	159	130	366	146	1140
Stop/Veh	0.84	0.77	0.79	0.28	0.59	0.63	0.58
Travel Dist (mi)	45.0	51.9	6.8	15.9	269.2	100.2	489.0
Travel Time (hr)	2.5	2.1	0.8	1.0	10.5	3.8	20.9
Avg Speed (mph)	18	24	8	16	26	26	24
Fuel Used (gal)	1.5	1.5	0.3	0.8	7.8	2.8	14.6
Fuel Eff. (mpg)	30.2	34.8	23.5	20.2	34.5	36.2	33.4
HC Emissions (g)	14	20	1	8	80	26	149
CO Emissions (g)	492	591	50	355	2042	694	4224
NOx Emissions (g)	45	60	6	32	270	89	503
Vehicles Entered	194	224	202	471	613	228	1932
Vehicles Exited	193	225	202	471	612	228	1931
Hourly Exit Rate	193	225	202	471	612	228	1931
Input Volume	194	223	204	462	628	232	1943
% of Volume	99	101	99	102	97	98	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

2: Cummings St. & Green Springs Rd. Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay (hr)	0.1	0.0	0.1	0.5	0.1	0.1	0.6	1.6
Total Del/Veh (s)	25.1	0.3	8.3	2.7	2.2	11.4	2.7	3.3
Stop Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.6
Total Stops	20	0	56	1	3	26	37	143
Stop/Veh	1.00	0.00	0.98	0.00	0.02	0.63	0.04	0.08
Travel Dist (mi)	1.5	0.1	4.3	107.6	20.6	1.5	29.6	165.1
Travel Time (hr)	0.2	0.0	0.3	3.9	0.8	0.2	1.7	7.1
Avg Speed (mph)	8	33	14	28	25	7	17	23
Fuel Used (gal)	0.1	0.0	0.1	4.7	0.8	0.1	2.5	8.2
Fuel Eff. (mpg)	28.0	40.5	41.6	22.9	25.7	15.9	11.9	20.1
HC Emissions (g)	0	1	0	64	11	1	36	112
CO Emissions (g)	4	9	10	2749	450	23	1477	4721
NOx Emissions (g)	0	2	1	215	36	3	137	395
Vehicles Entered	20	2	56	658	122	41	821	1720
Vehicles Exited	20	2	56	658	122	41	821	1720
Hourly Exit Rate	20	2	56	658	122	41	821	1720
Input Volume	21	1	56	652	127	45	834	1736
% of Volume	95	200	100	101	96	91	98	99
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	1.1	0.7	0.5	3.1	4.1	0.5	10.0
Total Del/Veh (s)	46.1	9.8	22.0	21.9	26.3	5.1	19.5
Stop Delay (hr)	1.0	0.6	0.4	2.4	2.8	0.3	7.5
Total Stops	79	240	86	253	351	181	1190
Stop/Veh	0.94	0.88	1.00	0.49	0.63	0.54	0.64
Travel Dist (mi)	12.9	41.4	5.7	33.6	91.4	55.0	240.0
Travel Time (hr)	1.5	2.2	0.8	4.3	6.7	2.4	17.9
Avg Speed (mph)	9	19	7	8	14	23	13
Fuel Used (gal)	0.7	1.3	0.3	2.2	3.6	1.6	9.8
Fuel Eff. (mpg)	19.2	31.1	17.3	15.3	25.1	34.5	24.6
HC Emissions (g)	5	16	3	17	36	24	101
CO Emissions (g)	238	632	85	604	1277	826	3663
NOx Emissions (g)	16	48	10	68	115	70	328
Vehicles Entered	83	269	86	509	551	333	1831
Vehicles Exited	84	270	85	510	552	333	1834
Hourly Exit Rate	84	270	85	510	552	333	1834
Input Volume	83	273	83	506	558	342	1845
% of Volume	101	99	102	101	99	97	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	5.0	0.5	1.4	0.2	1.3	1.8	10.0
Total Del/Veh (s)	69.4	9.6	14.4	5.0	17.8	16.5	23.5
Stop Delay (hr)	4.5	0.4	1.2	0.1	0.9	1.2	8.3
Total Stops	285	143	113	110	182	135	968
Stop/Veh	1.11	0.81	0.33	1.00	0.72	0.35	0.63
Travel Dist (mi)	37.0	26.1	8.2	2.4	16.6	24.9	115.2
Travel Time (hr)	6.2	1.4	1.6	0.3	1.9	2.5	14.0
Avg Speed (mph)	6	19	5	8	9	10	8
Fuel Used (gal)	2.4	0.9	0.8	0.1	0.9	1.5	6.6
Fuel Eff. (mpg)	15.3	29.9	10.9	18.1	17.8	16.2	17.3
HC Emissions (g)	16	10	6	1	7	15	56
CO Emissions (g)	763	407	204	32	213	513	2132
NOx Emissions (g)	49	32	26	5	29	58	200
Vehicles Entered	250	175	345	110	253	383	1516
Vehicles Exited	250	175	344	110	252	384	1515
Hourly Exit Rate	250	175	344	110	252	384	1515
Input Volume	247	179	342	109	251	390	1518
% of Volume	101	98	101	101	100	98	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay (hr)	1.4	0.2	0.0	1.3	0.3	0.0	3.2
Total Del/Veh (s)	307.0	36.6	15.3	10.3	1.9	0.6	11.0
Stop Delay (hr)	1.4	0.2	0.0	1.1	0.1	0.0	2.8
Total Stops	16	18	3	144	29	1	211
Stop/Veh	0.94	1.06	0.75	0.33	0.05	0.05	0.20
Travel Dist (mi)	1.3	1.4	0.1	8.5	12.2	0.4	23.9
Travel Time (hr)	1.5	0.2	0.0	1.6	0.8	0.0	4.2
Avg Speed (mph)	1	6	3	5	15	13	6
Fuel Used (gal)	0.4	0.1	0.0	0.7	0.8	0.0	2.0
Fuel Eff. (mpg)	3.7	21.2	10.7	12.3	14.8	22.7	12.2
HC Emissions (g)	0	0	0	6	10	0	16
CO Emissions (g)	21	5	1	160	308	3	497
NOx Emissions (g)	1	0	0	23	41	0	66
Vehicles Entered	16	17	4	439	540	20	1036
Vehicles Exited	16	17	4	439	541	20	1037
Hourly Exit Rate	16	17	4	439	541	20	1037
Input Volume	16	18	4	436	549	21	1044
% of Volume	100	94	100	101	99	95	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.3	0.3	0.0	0.0	0.1
Total Delay (hr)	0.0	0.2	1.8	0.0	0.1	0.1	2.2
Total Del/Veh (s)	15.4	8.3	17.2	14.8	3.6	1.1	7.9
Stop Delay (hr)	0.0	0.2	1.3	0.0	0.0	0.0	1.6
Total Stops	8	20	160	4	27	14	233
Stop/Veh	1.00	0.26	0.43	0.33	0.43	0.03	0.23
Travel Dist (mi)	0.7	6.6	69.7	2.3	1.4	11.0	91.7
Travel Time (hr)	0.1	0.4	3.8	0.1	0.1	0.5	5.1
Avg Speed (mph)	12	15	18	18	11	22	18
Fuel Used (gal)	0.0	0.1	2.2	0.1	0.1	0.8	3.3
Fuel Eff. (mpg)	37.3	44.6	31.5	30.2	24.2	13.4	27.5
HC Emissions (g)	0	1	22	0	0	11	35
CO Emissions (g)	2	23	711	22	13	537	1308
NOx Emissions (g)	0	3	66	1	2	42	114
Vehicles Entered	8	75	367	12	63	493	1018
Vehicles Exited	8	75	367	12	63	492	1017
Hourly Exit Rate	8	75	367	12	63	492	1017
Input Volume	9	72	367	11	66	500	1025
% of Volume	89	104	100	109	95	98	99
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.5	0.4	0.3	0.4	0.3	0.3	0.0	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	1.0	0.1	0.0	0.8	0.0	0.2	0.2	0.1	0.1	0.1	0.0
Total Del/Veh (s)	11.6	8.0	5.8	14.0	7.3	5.7	12.1	6.7	6.6	11.9	12.4	6.2
Stop Delay (hr)	0.0	0.6	0.0	0.0	0.5	0.0	0.1	0.1	0.0	0.1	0.1	0.0
Total Stops	6	193	17	5	161	3	34	34	22	26	23	10
Stop/Veh	0.75	0.42	0.46	0.83	0.40	0.60	0.72	0.39	0.73	0.72	0.70	0.71
Travel Dist (mi)	1.8	97.2	7.8	1.6	112.0	1.4	5.6	8.2	3.7	2.5	2.2	0.9
Travel Time (hr)	0.1	5.0	0.4	0.1	5.4	0.1	0.4	0.5	0.2	0.2	0.2	0.1
Avg Speed (mph)	18	20	20	18	21	20	14	17	17	11	11	14
Fuel Used (gal)	0.1	3.1	0.2	0.1	3.5	0.0	0.2	0.2	0.1	0.1	0.1	0.0
Fuel Eff. (mpg)	31.5	31.8	33.5	31.1	32.4	31.2	32.0	33.3	35.5	25.5	25.0	29.8
HC Emissions (g)	0	20	2	0	24	0	1	2	1	1	1	0
CO Emissions (g)	6	515	49	4	574	4	19	39	20	20	31	6
NOx Emissions (g)	1	71	7	1	82	0	2	5	3	2	4	1
Vehicles Entered	8	450	36	6	399	5	46	87	30	36	33	14
Vehicles Exited	8	450	36	6	399	5	46	87	30	36	33	14
Hourly Exit Rate	8	450	36	6	399	5	46	87	30	36	33	14
Input Volume	9	444	36	7	391	5	49	90	33	38	31	16
% of Volume	89	101	100	86	102	100	94	97	91	95	106	88
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	2.6
Total Del/Veh (s)	8.0
Stop Delay (hr)	1.7
Total Stops	534
Stop/Veh	0.46
Travel Dist (mi)	244.8
Travel Time (hr)	12.6
Avg Speed (mph)	20
Fuel Used (gal)	7.6
Fuel Eff. (mpg)	32.1
HC Emissions (g)	51
CO Emissions (g)	1285
NOx Emissions (g)	179
Vehicles Entered	1150
Vehicles Exited	1150
Hourly Exit Rate	1150
Input Volume	1149
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

Total Network Performance

Total Network Performance	
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.3
Total Delay (hr)	37.5
Total Del/Veh (s)	36.5
Stop Delay (hr)	26.9
Total Stops	4423
Stop/Veh	1.19
Travel Dist (mi)	2420.2
Travel Time (hr)	116.0
Avg Speed (mph)	21
Fuel Used (gal)	92.0
Fuel Eff. (mpg)	26.3
HC Emissions (g)	1019
CO Emissions (g)	35408
NOx Emissions (g)	3476
Vehicles Entered	3593
Vehicles Exited	3594
Hourly Exit Rate	3594
Input Volume	15477
% of Volume	23
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	17.2	36.9	0.2	19
Commerce St.	7	7.3	9.6	0.0	8
Total		24.5	46.5	0.2	17

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.1	3.6	0.0	20
Total		1.1	3.6	0.0	20

Queuing and Blocking Report

Existing PM Peak

11/22/2015

Intersection: 1: Cook St & Cummings St.

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	TR
Maximum Queue (ft)	163	107	106	110	118	224	243
Average Queue (ft)	79	57	61	28	57	106	116
95th Queue (ft)	131	91	96	78	98	190	201
Link Distance (ft)	1222	1222		122	122	2318	2318
Upstream Blk Time (%)			0	0	0		
Queuing Penalty (veh)			0	0	0		
Storage Bay Dist (ft)			100				
Storage Blk Time (%)			1	0			
Queuing Penalty (veh)			3	0			

Intersection: 2: Cummings St. & Green Springs Rd.

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (ft)	102	8	24	135	144
Average Queue (ft)	37	0	2	43	16
95th Queue (ft)	72	6	14	114	85
Link Distance (ft)	358	841	841	122	122
Upstream Blk Time (%)			1	1	
Queuing Penalty (veh)			4	2	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	136	151	174	252	407	124
Average Queue (ft)	58	72	62	165	224	61
95th Queue (ft)	110	124	147	237	365	102
Link Distance (ft)	809	809		278	841	841
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			0			
Storage Bay Dist (ft)			75			
Storage Blk Time (%)			2	37		
Queuing Penalty (veh)			8	31		

Queuing and Blocking Report

Existing PM Peak

11/22/2015

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	367	114	88	58	188	243
Average Queue (ft)	193	46	72	45	82	90
95th Queue (ft)	336	90	84	64	159	189
Link Distance (ft)	776	776	58			278
Upstream Blk Time (%)			39	3		0
Queuing Penalty (veh)			175	0		2
Storage Bay Dist (ft)				50	100	
Storage Blk Time (%)			43	4	4	10
Queuing Penalty (veh)			47	14	17	25

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	88	77	4	101	89
Average Queue (ft)	36	30	0	72	24
95th Queue (ft)	116	161	4	109	76
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)			2	30	2
Queuing Penalty (veh)			0	134	12
Storage Bay Dist (ft)		100			
Storage Blk Time (%)		9			
Queuing Penalty (veh)		2			

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	40	89	326	76
Average Queue (ft)	7	19	108	29
95th Queue (ft)	29	68	263	71
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)			2	
Queuing Penalty (veh)			13	
Storage Bay Dist (ft)		75		
Storage Blk Time (%)		2		
Queuing Penalty (veh)		0		

Queuing and Blocking Report

Existing PM Peak

11/22/2015

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	199	185	107	102
Average Queue (ft)	101	90	49	37
95th Queue (ft)	174	159	86	73
Link Distance (ft)	1139	1479	599	358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 490

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2895	3005	2987	2929	2868	2874	2972
Vehs Exited	2915	3015	2973	2922	2836	2880	2914
Starting Vehs	137	106	142	145	88	131	95
Ending Vehs	117	96	156	152	120	125	153
Denied Entry Before	1	0	30	1	1	2	1
Denied Entry After	1	0	22	3	0	69	42
Travel Distance (mi)	1744	1768	1775	1739	1694	1709	1736
Travel Time (hr)	133.1	99.2	155.2	159.5	99.2	177.5	148.7
Total Delay (hr)	69.8	35.0	91.0	96.5	37.7	115.2	85.6
Total Stops	3294	3182	3300	3106	3272	3057	3255
Fuel Used (gal)	73.9	66.9	80.2	79.8	65.2	83.0	77.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2937	2995	3028	2949
Vehs Exited	2887	2946	2973	2925
Starting Vehs	77	87	103	106
Ending Vehs	127	136	158	130
Denied Entry Before	0	1	0	3
Denied Entry After	16	0	8	15
Travel Distance (mi)	1716	1763	1788	1743
Travel Time (hr)	105.6	111.8	111.1	130.1
Total Delay (hr)	43.3	47.7	46.3	66.8
Total Stops	3430	3579	3466	3292
Fuel Used (gal)	67.0	69.3	70.3	73.3

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2895	3005	2987	2929	2868	2874	2972
Vehs Exited	2915	3015	2973	2922	2836	2880	2914
Starting Vehs	137	106	142	145	88	131	95
Ending Vehs	117	96	156	152	120	125	153
Denied Entry Before	1	0	30	1	1	2	1
Denied Entry After	1	0	22	3	0	69	42
Travel Distance (mi)	1744	1768	1775	1739	1694	1709	1736
Travel Time (hr)	133.1	99.2	155.2	159.5	99.2	177.5	148.7
Total Delay (hr)	69.8	35.0	91.0	96.5	37.7	115.2	85.6
Total Stops	3294	3182	3300	3106	3272	3057	3255
Fuel Used (gal)	73.9	66.9	80.2	79.8	65.2	83.0	77.2

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	2937	2995	3028	2949
Vehs Exited	2887	2946	2973	2925
Starting Vehs	77	87	103	106
Ending Vehs	127	136	158	130
Denied Entry Before	0	1	0	3
Denied Entry After	16	0	8	15
Travel Distance (mi)	1716	1763	1788	1743
Travel Time (hr)	105.6	111.8	111.1	130.1
Total Delay (hr)	43.3	47.7	46.3	66.8
Total Stops	3430	3579	3466	3292
Fuel Used (gal)	67.0	69.3	70.3	73.3

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.1	4.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	0.8	0.2	0.5	0.0	0.3	0.8	0.2	0.1	0.4	0.0	3.2
Total Del/Veh (s)	43.4	5.7	42.4	6.5	9.4	4.0	3.3	10.7	3.8	2.3	6.9
Stop Delay (hr)	0.8	0.1	0.5	0.0	0.2	0.4	0.0	0.1	0.2	0.0	2.3
Stop Del/Veh (s)	41.2	4.8	40.4	6.3	6.6	2.1	0.3	8.3	2.1	1.4	5.0
Total Stops	61	90	37	19	60	105	0	20	74	13	479
Stop/Veh	0.91	0.92	0.90	0.95	0.57	0.15	0.00	0.69	0.18	0.20	0.28
Travel Dist (mi)	15.4	22.4	1.7	0.8	21.3	133.6	34.1	6.0	84.1	13.1	332.5
Travel Time (hr)	1.4	1.1	0.6	0.1	1.1	5.5	1.4	0.3	3.3	0.5	15.3
Avg Speed (mph)	11	20	3	10	20	24	24	20	26	25	22
Fuel Used (gal)	0.6	0.7	0.2	0.0	0.8	5.2	1.2	0.2	2.5	0.3	11.7
Fuel Eff. (mpg)	23.7	33.3	9.6	39.4	26.5	25.5	28.2	35.3	34.3	38.7	28.4
HC Emissions (g)	3	6	1	0	6	66	17	1	24	3	127
CO Emissions (g)	85	142	39	2	238	1993	481	24	493	48	3544
NOx Emissions (g)	10	19	3	0	22	215	55	4	71	7	406
Vehicles Entered	66	97	41	20	105	672	176	29	403	63	1672
Vehicles Exited	66	96	40	20	105	672	176	29	404	64	1672
Hourly Exit Rate	66	96	40	20	105	672	176	29	404	64	1672
Input Volume	70	96	39	20	110	680	189	25	405	64	1698
% of Volume	94	100	103	100	95	99	93	116	100	100	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	0.5	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	0.9	1.2	0.8	2.3	1.4	0.2	6.8
Total Del/Veh (s)	43.6	11.8	20.5	14.0	15.2	4.0	14.2
Stop Delay (hr)	0.8	1.0	0.6	1.5	1.1	0.2	5.2
Stop Del/Veh (s)	40.7	9.9	16.2	9.2	11.7	2.5	10.9
Total Stops	64	327	114	259	142	103	1009
Stop/Veh	0.89	0.86	0.86	0.44	0.43	0.48	0.59
Travel Dist (mi)	10.9	57.5	8.8	38.2	62.9	44.3	222.6
Travel Time (hr)	1.3	3.5	1.1	3.7	3.6	1.9	15.2
Avg Speed (mph)	9	17	8	10	18	23	15
Fuel Used (gal)	0.5	1.8	0.5	2.1	2.4	1.4	8.7
Fuel Eff. (mpg)	20.3	32.5	17.6	18.2	26.5	31.3	25.6
HC Emissions (g)	3	17	3	19	24	18	85
CO Emissions (g)	131	499	113	551	656	489	2439
NOx Emissions (g)	9	50	14	72	75	55	275
Vehicles Entered	71	375	132	578	327	214	1697
Vehicles Exited	70	374	132	579	325	212	1692
Hourly Exit Rate	70	374	132	579	325	212	1692
Input Volume	71	377	136	602	329	211	1726
% of Volume	99	99	97	96	99	100	98
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.3	0.0	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	3.6	0.7	0.0	0.0	0.0	0.0	0.8
Total Delay (hr)	3.8	0.2	1.6	0.2	0.8	0.8	7.4
Total Del/Veh (s)	54.0	7.3	12.7	5.2	19.4	14.1	20.6
Stop Delay (hr)	3.5	0.2	1.4	0.2	0.7	0.6	6.5
Stop Del/Veh (s)	49.2	5.8	10.5	4.3	16.2	11.5	17.9
Total Stops	258	86	114	132	102	60	752
Stop/Veh	1.01	0.86	0.25	1.00	0.69	0.30	0.58
Travel Dist (mi)	37.0	14.9	11.0	2.9	9.6	13.0	88.4
Travel Time (hr)	5.4	0.8	2.0	0.4	1.2	1.2	11.1
Avg Speed (mph)	7	19	5	8	8	10	8
Fuel Used (gal)	2.1	0.5	1.0	0.2	0.6	0.8	5.0
Fuel Eff. (mpg)	18.0	31.9	11.0	17.1	17.0	17.0	17.6
HC Emissions (g)	12	5	10	1	4	8	40
CO Emissions (g)	427	151	270	30	138	266	1282
NOx Emissions (g)	36	15	39	5	17	30	141
Vehicles Entered	250	100	462	132	145	200	1289
Vehicles Exited	250	100	461	132	145	200	1288
Hourly Exit Rate	250	100	461	132	145	200	1288
Input Volume	253	100	486	138	145	203	1325
% of Volume	99	100	95	96	100	99	97
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Delay (hr)	9.4	0.5	0.0	2.3	0.1	0.0	12.4
Total Del/Veh (s)	1132.1	322.6	10.8	14.6	1.5	0.8	48.8
Stop Delay (hr)	9.4	0.5	0.0	2.0	0.1	0.0	12.1
Stop Del/Veh (s)	1133.4	321.5	9.7	12.6	0.7	0.6	47.3
Total Stops	20	7	2	174	12	1	216
Stop/Veh	0.67	1.17	0.50	0.30	0.04	0.04	0.24
Travel Dist (mi)	1.6	0.4	0.1	11.3	6.1	0.6	20.1
Travel Time (hr)	9.5	0.6	0.0	2.8	0.4	0.1	13.3
Avg Speed (mph)	0	1	5	4	15	12	2
Fuel Used (gal)	2.2	0.1	0.0	1.2	0.4	0.0	4.0
Fuel Eff. (mpg)	0.7	3.1	11.2	9.5	15.1	24.7	5.1
HC Emissions (g)	0	0	0	9	5	0	14
CO Emissions (g)	108	8	1	219	155	8	499
NOx Emissions (g)	1	0	0	35	19	1	56
Vehicles Entered	22	6	4	575	273	28	908
Vehicles Exited	17	5	4	575	273	28	902
Hourly Exit Rate	17	5	4	575	273	28	902
Input Volume	23	6	4	600	278	26	937
% of Volume	74	83	100	96	98	108	96
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	8.3	0.2	0.0	0.0	8.5
Denied Del/Veh (s)	0.0	0.0	57.0	64.5	0.0	0.0	34.0
Total Delay (hr)	0.0	0.8	22.2	0.5	0.0	0.1	23.7
Total Del/Veh (s)	10.8	34.8	151.4	148.4	4.7	0.8	93.5
Stop Delay (hr)	0.0	0.8	21.2	0.5	0.0	0.0	22.5
Stop Del/Veh (s)	8.6	34.4	144.1	144.9	3.4	0.3	89.0
Total Stops	11	46	410	7	16	7	497
Stop/Veh	1.00	0.57	0.78	0.58	0.43	0.03	0.55
Travel Dist (mi)	1.0	6.9	95.3	2.2	0.8	5.4	111.7
Travel Time (hr)	0.1	1.1	33.7	0.8	0.1	0.2	36.0
Avg Speed (mph)	14	6	4	4	9	22	4
Fuel Used (gal)	0.0	0.3	9.5	0.2	0.0	0.3	10.4
Fuel Eff. (mpg)	36.6	22.0	10.1	10.1	23.0	15.8	10.7
HC Emissions (g)	0	2	38	0	0	5	46
CO Emissions (g)	3	43	1159	17	10	213	1445
NOx Emissions (g)	0	4	80	1	1	18	105
Vehicles Entered	11	79	508	12	37	239	886
Vehicles Exited	11	80	498	12	37	239	877
Hourly Exit Rate	11	80	498	12	37	239	877
Input Volume	12	80	523	11	38	245	909
% of Volume	92	100	95	109	97	98	96
Denied Entry Before	0	0	3	0	0	0	3
Denied Entry After	0	0	15	0	0	0	15

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.0	0.5	0.0	0.1	0.2	0.1	0.1	0.0	0.0
Total Del/Veh (s)	13.8	5.1	2.3	7.6	5.8	2.0	14.0	13.7	6.4	14.2	11.9	6.0
Stop Delay (hr)	0.0	0.2	0.0	0.0	0.3	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Stop Del/Veh (s)	11.3	3.1	1.6	4.8	3.3	1.2	11.9	11.2	5.5	12.6	9.9	5.7
Total Stops	1	91	3	5	109	0	21	31	45	13	9	6
Stop/Veh	1.00	0.33	0.30	0.50	0.33	0.00	0.72	0.70	0.71	0.72	0.69	0.75
Travel Dist (mi)	0.3	59.5	2.0	2.8	90.6	0.4	1.7	2.5	3.6	1.2	0.9	0.5
Travel Time (hr)	0.0	2.8	0.1	0.1	4.2	0.0	0.2	0.3	0.3	0.1	0.1	0.0
Avg Speed (mph)	18	21	22	21	22	22	9	9	12	10	11	14
Fuel Used (gal)	0.0	1.8	0.1	0.1	2.8	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Fuel Eff. (mpg)	32.2	32.4	35.1	31.7	32.7	35.0	21.8	22.0	26.7	24.9	26.5	33.1
HC Emissions (g)	0	15	0	0	20	0	0	1	1	0	0	0
CO Emissions (g)	1	360	6	9	487	1	17	29	43	7	5	2
NOx Emissions (g)	0	51	1	1	70	0	2	3	5	1	0	0
Vehicles Entered	1	274	10	10	323	1	29	43	63	18	12	8
Vehicles Exited	1	275	9	10	323	2	29	44	63	17	13	8
Hourly Exit Rate	1	275	9	10	323	2	29	44	63	17	13	8
Input Volume	2	278	8	9	321	1	28	44	65	19	13	8
% of Volume	50	99	112	111	101	200	104	100	97	89	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	1.5
Total Del/Veh (s)	6.6
Stop Delay (hr)	1.0
Stop Del/Veh (s)	4.5
Total Stops	334
Stop/Veh	0.42
Travel Dist (mi)	165.9
Travel Time (hr)	8.3
Avg Speed (mph)	20
Fuel Used (gal)	5.2
Fuel Eff. (mpg)	32.0
HC Emissions (g)	39
CO Emissions (g)	966
NOx Emissions (g)	134
Vehicles Entered	792
Vehicles Exited	794
Hourly Exit Rate	794
Input Volume	796
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.2	0.2
Total Del/Veh (s)	2.8	2.8
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	10.2	10.2
Travel Time (hr)	0.7	0.7
Avg Speed (mph)	15	15
Fuel Used (gal)	0.8	0.8
Fuel Eff. (mpg)	12.0	12.0
HC Emissions (g)	14	14
CO Emissions (g)	545	545
NOx Emissions (g)	46	46
Vehicles Entered	204	204
Vehicles Exited	204	204
Hourly Exit Rate	204	204
Input Volume	214	214
% of Volume	95	95
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.0	0.0
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	2.4	2.4
Travel Time (hr)	0.1	0.1
Avg Speed (mph)	30	30
Fuel Used (gal)	0.1	0.1
Fuel Eff. (mpg)	35.6	35.6
HC Emissions (g)	0	0
CO Emissions (g)	5	5
NOx Emissions (g)	1	1
Vehicles Entered	32	32
Vehicles Exited	32	32
Hourly Exit Rate	32	32
Input Volume	30	30
% of Volume	107	107
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	9.1
Denied Del/Veh (s)	11.1
Total Delay (hr)	57.7
Total Del/Veh (s)	68.0
Stop Delay (hr)	50.9
Stop Del/Veh (s)	60.0
Total Stops	3292
Stop/Veh	1.08
Travel Dist (mi)	1743.1
Travel Time (hr)	130.1
Avg Speed (mph)	14
Fuel Used (gal)	73.3
Fuel Eff. (mpg)	23.8
HC Emissions (g)	665
CO Emissions (g)	18759
NOx Emissions (g)	2087
Vehicles Entered	2949
Vehicles Exited	2925
Hourly Exit Rate	2925
Input Volume	11813
% of Volume	25
Denied Entry Before	3
Denied Entry After	15

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	151.4	229.6	0.2	4
Commerce St.	7	9.2	11.8	0.0	6
Total		160.6	241.4	0.2	4

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	0.8	3.6	0.0	20
Total		0.8	3.6	0.0	20

Queuing and Blocking Report

2018 Background AM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	L	T	TR
Maximum Queue (ft)	112	82	88	44	79	102	114	58	109	119
Average Queue (ft)	51	38	35	16	33	32	49	17	35	37
95th Queue (ft)	98	66	72	43	65	76	94	47	82	89
Link Distance (ft)	1224	1224			1019	1019		1046	1046	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			200		100			100		
Storage Blk Time (%)					0	0	0	0	0	
Queuing Penalty (veh)					0	0	1	0	0	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	118	199	174	295	212	84
Average Queue (ft)	50	96	78	181	102	40
95th Queue (ft)	94	166	172	287	179	70
Link Distance (ft)		808		278	1019	1019
Upstream Blk Time (%)				1		
Queuing Penalty (veh)				8		
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	3	23			
Queuing Penalty (veh)	0	16	31			

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	248	323	90	58	143	128
Average Queue (ft)	163	77	73	47	52	47
95th Queue (ft)	247	241	84	61	104	101
Link Distance (ft)		776	58		278	
Upstream Blk Time (%)			49	3		
Queuing Penalty (veh)			308	0		
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	19	0	52	5	1	1
Queuing Penalty (veh)	19	0	72	24	2	1

Queuing and Blocking Report

2018 Background AM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	190	314	43	118	73
Average Queue (ft)	154	156	27	90	11
95th Queue (ft)	242	448	167	111	51
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		17	4	54	1
Queuing Penalty (veh)		0	0	323	4
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	85				
Queuing Penalty (veh)	5				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	50	147	931	64
Average Queue (ft)	10	48	673	20
95th Queue (ft)	38	121	1281	59
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)		36	2	
Queuing Penalty (veh)		0	6	
Storage Bay Dist (ft)	75			
Storage Blk Time (%)	13			
Queuing Penalty (veh)	2			

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	129	141	110	59
Average Queue (ft)	57	65	49	21
95th Queue (ft)	110	122	89	51
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 822

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3873	3877	3999	3961	3923	3878	4063
Vehs Exited	3879	3905	4014	3943	3923	3872	4020
Starting Vehs	120	147	145	117	108	152	118
Ending Vehs	114	119	130	135	108	158	161
Denied Entry Before	0	0	0	1	0	0	0
Denied Entry After	2	1	0	0	0	0	0
Travel Distance (mi)	2383	2433	2470	2447	2418	2390	2512
Travel Time (hr)	120.4	131.2	127.7	127.8	125.6	127.1	139.9
Total Delay (hr)	33.8	42.9	37.8	38.9	37.7	39.8	48.7
Total Stops	3936	4311	4234	4130	4076	4161	4591
Fuel Used (gal)	86.6	90.8	91.4	90.3	89.3	88.5	94.8

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3951	4034	3948	3950
Vehs Exited	3959	4012	3966	3950
Starting Vehs	135	110	132	120
Ending Vehs	127	132	114	129
Denied Entry Before	0	1	1	0
Denied Entry After	0	1	0	0
Travel Distance (mi)	2448	2485	2444	2443
Travel Time (hr)	130.3	135.6	127.7	129.3
Total Delay (hr)	41.0	45.0	38.7	40.4
Total Stops	4251	4470	4132	4226
Fuel Used (gal)	90.9	93.1	90.2	90.6

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3873	3877	3999	3961	3923	3878	4063
Vehs Exited	3879	3905	4014	3943	3923	3872	4020
Starting Vehs	120	147	145	117	108	152	118
Ending Vehs	114	119	130	135	108	158	161
Denied Entry Before	0	0	0	1	0	0	0
Denied Entry After	2	1	0	0	0	0	0
Travel Distance (mi)	2383	2433	2470	2447	2418	2390	2512
Travel Time (hr)	120.4	131.2	127.7	127.8	125.6	127.1	139.9
Total Delay (hr)	33.8	42.9	37.8	38.9	37.7	39.8	48.7
Total Stops	3936	4311	4234	4130	4076	4161	4591
Fuel Used (gal)	86.6	90.8	91.4	90.3	89.3	88.5	94.8

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3951	4034	3948	3950
Vehs Exited	3959	4012	3966	3950
Starting Vehs	135	110	132	120
Ending Vehs	127	132	114	129
Denied Entry Before	0	1	1	0
Denied Entry After	0	1	0	0
Travel Distance (mi)	2448	2485	2444	2443
Travel Time (hr)	130.3	135.6	127.7	129.3
Total Delay (hr)	41.0	45.0	38.7	40.4
Total Stops	4251	4470	4132	4226
Fuel Used (gal)	90.9	93.1	90.2	90.6

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	4.0	0.1	0.1	0.0	0.1	1.0	0.2	0.2	0.2
Total Delay (hr)	3.2	0.6	0.2	0.1	0.9	1.2	0.1	0.1	2.5	0.7	9.7
Total Del/Veh (s)	57.0	8.6	46.6	6.5	14.6	8.7	3.4	11.0	13.9	11.0	15.2
Stop Delay (hr)	3.0	0.5	0.2	0.1	0.7	0.8	0.0	0.1	1.6	0.5	7.4
Stop Del/Veh (s)	53.4	7.4	44.7	6.0	10.8	5.9	0.3	6.6	8.9	6.9	11.7
Total Stops	196	202	16	59	166	155	0	27	262	102	1185
Stop/Veh	0.98	0.85	0.89	0.98	0.75	0.32	0.00	0.63	0.40	0.42	0.52
Travel Dist (mi)	45.2	54.5	0.7	2.4	43.5	95.9	24.3	18.1	280.7	103.9	669.1
Travel Time (hr)	5.1	2.9	0.3	0.2	2.5	4.5	1.0	0.8	12.0	4.4	33.8
Avg Speed (mph)	9	19	3	10	17	21	24	24	23	23	20
Fuel Used (gal)	2.1	1.7	0.1	0.1	1.7	3.8	0.9	0.5	8.6	3.0	22.5
Fuel Eff. (mpg)	21.6	32.2	8.9	35.6	25.2	25.2	28.4	34.0	32.6	34.3	29.7
HC Emissions (g)	10	14	0	0	19	43	12	4	77	33	213
CO Emissions (g)	300	350	13	13	589	1360	342	83	1728	690	5469
NOx Emissions (g)	34	46	1	1	61	143	38	11	229	93	658
Vehicles Entered	194	234	18	60	215	476	126	41	645	240	2249
Vehicles Exited	196	235	18	60	217	476	127	42	646	238	2255
Hourly Exit Rate	196	235	18	60	217	476	127	42	646	238	2255
Input Volume	200	230	22	58	210	476	131	46	647	239	2259
% of Volume	98	102	82	103	103	100	97	91	100	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.5	0.5	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	1.3	0.8	1.0	2.1	4.2	0.6	10.0
Total Del/Veh (s)	51.3	10.3	41.9	14.4	25.6	5.7	18.6
Stop Delay (hr)	1.2	0.7	0.9	1.4	2.9	0.3	7.5
Stop Del/Veh (s)	48.2	8.8	37.6	9.5	18.0	2.8	13.9
Total Stops	82	244	94	263	282	134	1099
Stop/Veh	0.89	0.86	1.04	0.50	0.48	0.38	0.57
Travel Dist (mi)	13.8	43.4	5.9	34.4	118.3	70.3	286.0
Travel Time (hr)	1.9	2.5	1.3	3.4	8.3	3.3	20.7
Avg Speed (mph)	8	17	5	10	14	22	14
Fuel Used (gal)	0.7	1.3	0.5	1.9	4.9	2.5	11.9
Fuel Eff. (mpg)	18.8	32.4	12.8	17.8	23.9	28.1	24.0
HC Emissions (g)	4	14	3	16	43	32	111
CO Emissions (g)	164	383	93	475	1241	944	3300
NOx Emissions (g)	13	39	11	62	150	102	376
Vehicles Entered	90	282	89	522	579	347	1909
Vehicles Exited	90	283	89	520	576	344	1902
Hourly Exit Rate	90	283	89	520	576	344	1902
Input Volume	86	281	86	521	575	352	1901
% of Volume	105	101	103	100	100	98	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.2	0.0	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	3.5	0.8	0.0	0.0	0.0	0.0	0.7
Total Delay (hr)	3.6	0.7	1.4	0.2	1.5	1.9	9.2
Total Del/Veh (s)	49.8	13.0	13.8	6.2	20.5	16.5	20.8
Stop Delay (hr)	3.2	0.6	1.2	0.2	1.2	1.4	7.8
Stop Del/Veh (s)	45.0	11.3	11.7	5.4	16.3	12.6	17.6
Total Stops	234	161	113	110	186	129	933
Stop/Veh	0.91	0.84	0.32	0.99	0.71	0.31	0.59
Travel Dist (mi)	37.1	28.4	8.5	2.5	17.1	26.4	119.9
Travel Time (hr)	5.2	1.9	1.7	0.3	2.2	2.8	14.0
Avg Speed (mph)	8	16	5	7	8	9	9
Fuel Used (gal)	2.0	0.9	0.8	0.1	1.0	1.5	6.3
Fuel Eff. (mpg)	18.7	30.4	11.3	17.1	17.6	17.3	19.0
HC Emissions (g)	14	11	6	1	6	12	49
CO Emissions (g)	465	293	178	23	194	387	1540
NOx Emissions (g)	41	30	24	4	25	47	172
Vehicles Entered	250	190	356	110	259	408	1573
Vehicles Exited	254	191	356	110	260	407	1578
Hourly Exit Rate	254	191	356	110	260	407	1578
Input Volume	254	184	352	112	259	403	1564
% of Volume	100	104	101	98	100	101	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	0.0	0.0	1.4	0.3	0.0	2.7
Total Del/Veh (s)	197.5	8.1	8.4	10.9	1.7	0.7	8.8
Stop Delay (hr)	1.0	0.0	0.0	1.2	0.1	0.0	2.3
Stop Del/Veh (s)	196.5	7.9	7.2	9.4	0.7	0.5	7.6
Total Stops	17	20	2	148	31	0	218
Stop/Veh	0.94	1.00	0.50	0.33	0.05	0.00	0.20
Travel Dist (mi)	1.4	1.6	0.1	8.7	12.9	0.5	25.3
Travel Time (hr)	1.0	0.1	0.0	1.7	0.9	0.0	3.8
Avg Speed (mph)	1	14	6	5	15	13	7
Fuel Used (gal)	0.3	0.0	0.0	0.7	0.8	0.0	1.9
Fuel Eff. (mpg)	5.5	37.8	13.8	11.8	15.3	23.6	13.2
HC Emissions (g)	0	0	0	5	10	0	15
CO Emissions (g)	16	3	1	140	291	3	453
NOx Emissions (g)	1	0	0	21	40	1	63
Vehicles Entered	17	20	4	449	574	24	1088
Vehicles Exited	17	20	4	449	574	24	1088
Hourly Exit Rate	17	20	4	449	574	24	1088
Input Volume	16	19	4	448	566	22	1075
% of Volume	106	105	100	100	101	109	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.3	0.2	0.0	0.0	0.1
Total Delay (hr)	0.0	0.2	2.8	0.1	0.1	0.1	3.3
Total Del/Veh (s)	13.9	8.5	26.3	22.9	3.5	0.9	11.1
Stop Delay (hr)	0.0	0.2	2.4	0.1	0.0	0.0	2.7
Stop Del/Veh (s)	12.2	7.8	22.0	20.9	2.1	0.2	9.0
Total Stops	7	22	206	4	26	14	279
Stop/Veh	1.00	0.30	0.53	0.40	0.36	0.03	0.26
Travel Dist (mi)	0.6	6.5	72.9	1.8	1.6	11.6	95.0
Travel Time (hr)	0.0	0.4	5.3	0.1	0.2	0.5	6.6
Avg Speed (mph)	12	15	14	14	11	21	14
Fuel Used (gal)	0.0	0.2	2.6	0.1	0.1	0.8	3.7
Fuel Eff. (mpg)	33.3	38.4	27.9	28.9	23.2	15.5	25.8
HC Emissions (g)	0	1	20	0	0	10	32
CO Emissions (g)	2	23	535	9	14	405	988
NOx Emissions (g)	0	3	55	1	2	38	99
Vehicles Entered	7	74	386	9	72	520	1068
Vehicles Exited	7	73	380	9	72	520	1061
Hourly Exit Rate	7	73	380	9	72	520	1061
Input Volume	9	74	378	11	68	516	1056
% of Volume	78	99	101	82	106	101	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.9	0.0	0.0	0.8	0.0	0.2	0.2	0.1	0.2	0.1	0.0
Total Del/Veh (s)	11.6	6.9	4.9	13.3	6.9	5.7	16.0	16.8	8.8	15.1	15.1	7.1
Stop Delay (hr)	0.0	0.5	0.0	0.0	0.4	0.0	0.2	0.2	0.1	0.1	0.1	0.0
Stop Del/Veh (s)	7.9	3.8	2.6	9.2	3.7	3.3	13.8	14.2	7.8	13.2	12.7	6.3
Total Stops	5	170	12	6	151	2	36	36	24	27	24	13
Stop/Veh	0.62	0.36	0.33	0.75	0.37	0.40	0.73	0.73	0.71	0.75	0.71	0.72
Travel Dist (mi)	1.8	100.6	7.9	2.3	114.4	1.4	2.8	2.8	1.9	2.5	2.3	1.2
Travel Time (hr)	0.1	5.0	0.4	0.1	5.5	0.1	0.3	0.3	0.2	0.3	0.2	0.1
Avg Speed (mph)	18	20	21	19	21	21	8	8	11	10	10	13
Fuel Used (gal)	0.1	3.1	0.2	0.1	3.5	0.0	0.1	0.1	0.1	0.1	0.1	0.0
Fuel Eff. (mpg)	31.4	32.1	34.0	32.5	32.5	32.7	20.4	19.9	24.4	22.9	22.2	27.5
HC Emissions (g)	0	20	2	0	21	0	1	1	1	0	2	0
CO Emissions (g)	6	522	40	7	543	4	27	29	31	20	39	8
NOx Emissions (g)	1	73	6	1	77	0	3	3	4	2	5	1
Vehicles Entered	8	467	36	8	408	5	48	49	33	36	34	18
Vehicles Exited	8	466	36	8	407	5	48	48	34	36	34	18
Hourly Exit Rate	8	466	36	8	407	5	48	48	34	36	34	18
Input Volume	9	457	37	7	403	5	50	53	34	39	32	16
% of Volume	89	102	97	114	101	100	96	91	100	92	106	112
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	2.7
Total Del/Veh (s)	8.3
Stop Delay (hr)	1.7
Stop Del/Veh (s)	5.4
Total Stops	506
Stop/Veh	0.44
Travel Dist (mi)	241.7
Travel Time (hr)	12.6
Avg Speed (mph)	19
Fuel Used (gal)	7.7
Fuel Eff. (mpg)	31.5
HC Emissions (g)	48
CO Emissions (g)	1275
NOx Emissions (g)	174
Vehicles Entered	1150
Vehicles Exited	1148
Hourly Exit Rate	1148
Input Volume	1142
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	2.3	2.3
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	8.6	8.6
Travel Time (hr)	0.6	0.6
Avg Speed (mph)	16	16
Fuel Used (gal)	0.7	0.7
Fuel Eff. (mpg)	12.2	12.2
HC Emissions (g)	10	10
CO Emissions (g)	444	444
NOx Emissions (g)	36	36
Vehicles Entered	169	169
Vehicles Exited	170	170
Hourly Exit Rate	170	170
Input Volume	177	177
% of Volume	96	96
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.1	0.1
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	5.9	5.9
Travel Time (hr)	0.2	0.2
Avg Speed (mph)	30	30
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	35.3	35.3
HC Emissions (g)	2	2
CO Emissions (g)	37	37
NOx Emissions (g)	6	6
Vehicles Entered	78	78
Vehicles Exited	78	78
Hourly Exit Rate	78	78
Input Volume	76	76
% of Volume	103	103
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	0.7
Denied Del/Veh (s)	0.6
Total Delay (hr)	39.7
Total Del/Veh (s)	35.1
Stop Delay (hr)	29.7
Stop Del/Veh (s)	26.2
Total Stops	4226
Stop/Veh	1.04
Travel Dist (mi)	2443.0
Travel Time (hr)	129.3
Avg Speed (mph)	19
Fuel Used (gal)	90.6
Fuel Eff. (mpg)	27.0
HC Emissions (g)	875
CO Emissions (g)	24560
NOx Emissions (g)	2825
Vehicles Entered	3950
Vehicles Exited	3950
Hourly Exit Rate	3950
Input Volume	13388
% of Volume	30
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	26.3	49.4	0.2	14
Commerce St.	7	7.6	10.0	0.0	7
Total		33.9	59.5	0.2	13

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	0.9	3.7	0.0	20
Total		0.9	3.7	0.0	20

Queuing and Blocking Report

2018 Background PM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	L	T	TR
Maximum Queue (ft)	273	130	61	62	175	146	152	128	227	273
Average Queue (ft)	149	66	18	31	81	56	71	22	118	136
95th Queue (ft)	247	109	48	56	144	116	129	70	205	239
Link Distance (ft)	1225	1225			1024	1024	1024	2291	2291	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			200		100			100		
Storage Blk Time (%)					4	1	2	0	10	
Queuing Penalty (veh)					10	3	3	0	4	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	158	172	174	300	492	264
Average Queue (ft)	66	76	79	195	208	61
95th Queue (ft)	132	134	172	307	402	165
Link Distance (ft)	809		278	1024	1024	
Upstream Blk Time (%)			1			
Queuing Penalty (veh)			8			
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	0	8	19		
Queuing Penalty (veh)	1	0	41	16		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	248	330	84	58	198	271
Average Queue (ft)	162	110	72	44	91	100
95th Queue (ft)	243	257	82	65	171	203
Link Distance (ft)	776	58			278	
Upstream Blk Time (%)			40	4	1	
Queuing Penalty (veh)			187	0	4	
Storage Bay Dist (ft)	150		50	100		
Storage Blk Time (%)	17	1	44	5	6	12
Queuing Penalty (veh)	31	2	49	19	26	31

Queuing and Blocking Report

2018 Background PM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	80	65	107	82
Average Queue (ft)	31	16	75	24
95th Queue (ft)	85	53	111	75
Link Distance (ft)		382	51	58
Upstream Blk Time (%)			34	2
Queuing Penalty (veh)		155		14
Storage Bay Dist (ft)	100			
Storage Blk Time (%)	4	0		
Queuing Penalty (veh)	1	0		

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	30	96	414	70
Average Queue (ft)	6	21	147	29
95th Queue (ft)	26	70	363	70
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)				3
Queuing Penalty (veh)				15
Storage Bay Dist (ft)	75			
Storage Blk Time (%)		2		
Queuing Penalty (veh)		0		

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	195	187	119	92
Average Queue (ft)	97	84	54	38
95th Queue (ft)	167	152	96	74
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 621

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3659	3735	3728	3728	3606	3664	3801
Vehs Exited	3617	3688	3665	3723	3566	3640	3777
Starting Vehs	204	191	189	202	169	211	193
Ending Vehs	246	238	252	207	209	235	217
Denied Entry Before	29	78	37	60	2	53	99
Denied Entry After	155	270	148	219	171	184	267
Travel Distance (mi)	2062	2113	2111	2138	2046	2102	2161
Travel Time (hr)	294.7	381.7	293.7	340.8	278.7	321.6	405.2
Total Delay (hr)	219.3	304.5	216.3	262.8	203.7	244.7	326.0
Total Stops	4554	4653	4704	4656	4486	4509	4681
Fuel Used (gal)	119.9	141.1	121.0	132.5	116.3	127.1	148.0

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3664	3894	3693	3718
Vehs Exited	3647	3865	3665	3685
Starting Vehs	208	184	173	187
Ending Vehs	225	213	201	224
Denied Entry Before	62	52	56	52
Denied Entry After	206	113	183	190
Travel Distance (mi)	2069	2198	2109	2111
Travel Time (hr)	337.7	293.6	319.0	326.7
Total Delay (hr)	261.9	213.2	241.9	249.4
Total Stops	4533	4853	4447	4609
Fuel Used (gal)	130.0	123.4	126.8	128.6

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3659	3735	3728	3728	3606	3664	3801
Vehs Exited	3617	3688	3665	3723	3566	3640	3777
Starting Vehs	204	191	189	202	169	211	193
Ending Vehs	246	238	252	207	209	235	217
Denied Entry Before	29	78	37	60	2	53	99
Denied Entry After	155	270	148	219	171	184	267
Travel Distance (mi)	2062	2113	2111	2138	2046	2102	2161
Travel Time (hr)	294.7	381.7	293.7	340.8	278.7	321.6	405.2
Total Delay (hr)	219.3	304.5	216.3	262.8	203.7	244.7	326.0
Total Stops	4554	4653	4704	4656	4486	4509	4681
Fuel Used (gal)	119.9	141.1	121.0	132.5	116.3	127.1	148.0

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3664	3894	3693	3718
Vehs Exited	3647	3865	3665	3685
Starting Vehs	208	184	173	187
Ending Vehs	225	213	201	224
Denied Entry Before	62	52	56	52
Denied Entry After	206	113	183	190
Travel Distance (mi)	2069	2198	2109	2111
Travel Time (hr)	337.7	293.6	319.0	326.7
Total Delay (hr)	261.9	213.2	241.9	249.4
Total Stops	4533	4853	4447	4609
Fuel Used (gal)	130.0	123.4	126.8	128.6

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4
Denied Del/Veh (s)	0.2	0.1	3.5	0.4	0.0	0.0	0.0	1.4	0.2	0.2	0.5
Total Delay (hr)	1.0	0.2	3.2	0.5	0.3	1.8	0.5	1.1	1.0	0.1	9.6
Total Del/Veh (s)	50.3	6.5	55.6	9.1	9.5	11.5	4.3	14.7	9.5	5.1	14.7
Stop Delay (hr)	0.9	0.1	3.0	0.5	0.2	1.4	0.0	0.8	0.6	0.1	7.7
Stop Del/Veh (s)	48.0	5.7	52.5	8.3	6.6	8.9	0.3	9.9	6.2	3.3	11.7
Total Stops	62	88	184	203	56	162	0	194	108	18	1075
Stop/Veh	0.87	0.94	0.90	0.94	0.57	0.28	0.00	0.70	0.29	0.27	0.45
Travel Dist (mi)	16.1	21.4	8.2	8.8	19.8	113.1	77.5	118.3	155.8	28.5	567.4
Travel Time (hr)	1.7	1.1	3.7	1.0	1.0	5.9	3.4	5.3	6.2	1.1	30.4
Avg Speed (mph)	10	20	2	9	20	19	23	23	25	26	19
Fuel Used (gal)	0.7	0.7	1.1	0.4	0.8	4.7	2.8	3.6	4.7	0.8	20.1
Fuel Eff. (mpg)	22.7	32.6	7.7	24.4	26.1	24.0	28.2	33.1	32.9	35.2	28.2
HC Emissions (g)	1	5	4	2	7	53	30	32	40	9	183
CO Emissions (g)	74	117	153	75	250	1747	973	666	927	181	5162
NOx Emissions (g)	8	16	12	9	24	174	105	93	117	25	583
Vehicles Entered	69	93	202	214	98	568	398	273	360	66	2341
Vehicles Exited	68	92	197	214	97	568	396	272	360	65	2329
Hourly Exit Rate	68	92	197	214	97	568	396	272	360	65	2329
Input Volume	70	96	209	218	110	607	434	277	361	64	2446
% of Volume	97	96	94	98	88	94	91	98	100	102	95
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	0.6	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	1.1	2.3	1.2	4.6	2.5	0.5	12.2
Total Del/Veh (s)	55.6	19.1	34.6	26.0	23.6	6.2	22.8
Stop Delay (hr)	1.1	2.1	1.0	3.7	2.0	0.3	10.1
Stop Del/Veh (s)	52.3	17.4	29.9	20.6	18.4	4.1	18.9
Total Stops	65	383	134	341	216	161	1300
Stop/Veh	0.88	0.89	1.09	0.53	0.56	0.59	0.67
Travel Dist (mi)	10.9	65.0	8.1	41.9	75.4	56.1	257.3
Travel Time (hr)	1.6	4.9	1.5	6.2	5.2	2.7	22.0
Avg Speed (mph)	7	14	5	7	14	21	12
Fuel Used (gal)	0.6	2.2	0.6	2.8	3.2	1.9	11.3
Fuel Eff. (mpg)	17.9	29.9	14.2	15.0	23.8	29.0	22.8
HC Emissions (g)	3	17	3	19	24	21	87
CO Emissions (g)	135	532	107	574	789	646	2782
NOx Emissions (g)	9	50	13	74	86	69	301
Vehicles Entered	70	423	121	631	381	269	1895
Vehicles Exited	72	423	122	640	385	272	1914
Hourly Exit Rate	72	423	122	640	385	272	1914
Input Volume	71	420	136	731	387	279	2024
% of Volume	101	101	90	88	99	97	95
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	19.5	5.8	0.0	0.0	0.0	0.0	25.4
Denied Del/Veh (s)	198.7	195.0	0.0	0.0	0.0	0.0	63.7
Total Delay (hr)	23.4	4.3	1.8	0.2	1.0	0.7	31.3
Total Del/Veh (s)	245.9	147.5	14.5	5.4	19.9	9.9	79.1
Stop Delay (hr)	22.0	4.0	1.5	0.1	0.8	0.4	28.8
Stop Del/Veh (s)	231.1	136.6	12.2	4.5	16.2	6.7	72.9
Total Stops	590	164	112	118	144	65	1193
Stop/Veh	1.73	1.56	0.25	1.00	0.81	0.27	0.84
Travel Dist (mi)	47.4	14.8	10.5	2.6	11.6	15.5	102.5
Travel Time (hr)	44.6	10.7	2.1	0.3	1.5	1.2	60.5
Avg Speed (mph)	2	3	5	8	8	13	3
Fuel Used (gal)	11.4	2.8	1.0	0.2	0.7	0.9	16.9
Fuel Eff. (mpg)	4.2	5.3	10.9	16.7	17.0	18.1	6.1
HC Emissions (g)	27	8	8	1	3	8	56
CO Emissions (g)	1003	312	217	33	133	275	1971
NOx Emissions (g)	57	22	32	5	17	32	165
Vehicles Entered	323	100	437	118	177	240	1395
Vehicles Exited	313	100	438	117	176	240	1384
Hourly Exit Rate	313	100	438	117	176	240	1384
Input Volume	339	100	527	138	179	238	1521
% of Volume	92	100	83	85	98	101	91
Denied Entry Before	11	2	0	0	0	0	13
Denied Entry After	31	8	0	0	0	0	39

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	18.0	1.8	0.0	2.8	0.2	0.0	22.7
Total Del/Veh (s)	2696.6	1581.0	27.6	18.2	2.0	0.7	88.7
Stop Delay (hr)	18.0	1.8	0.0	2.5	0.1	0.0	22.4
Stop Del/Veh (s)	2698.7	1581.5	27.8	16.3	1.1	0.5	87.3
Total Stops	3	3	1	147	22	1	177
Stop/Veh	0.12	0.75	0.33	0.27	0.07	0.03	0.19
Travel Dist (mi)	0.5	0.1	0.1	10.7	6.9	0.7	19.1
Travel Time (hr)	18.0	1.8	0.0	3.2	0.5	0.1	23.6
Avg Speed (mph)	0	0	2	3	14	13	1
Fuel Used (gal)	4.1	0.4	0.0	1.3	0.4	0.0	6.2
Fuel Eff. (mpg)	0.1	0.4	6.3	8.4	16.2	25.3	3.1
HC Emissions (g)	13	0	0	9	4	0	27
CO Emissions (g)	346	20	1	222	137	9	736
NOx Emissions (g)	9	0	0	34	17	1	62
Vehicles Entered	8	2	3	550	306	32	901
Vehicles Exited	5	2	3	551	307	32	900
Hourly Exit Rate	5	2	3	551	307	32	900
Input Volume	27	6	4	639	308	29	1013
% of Volume	19	33	75	86	100	110	89
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	85.8	1.7	0.0	0.0	87.5
Denied Del/Veh (s)	0.0	0.0	520.9	554.1	0.0	0.0	306.7
Total Delay (hr)	0.2	5.5	37.9	0.7	0.1	0.1	44.5
Total Del/Veh (s)	59.3	190.8	275.7	262.1	5.3	1.1	172.3
Stop Delay (hr)	0.2	5.5	37.3	0.7	0.1	0.0	43.8
Stop Del/Veh (s)	56.6	192.9	271.2	258.3	3.9	0.4	169.9
Total Stops	18	79	236	4	21	11	369
Stop/Veh	1.29	0.77	0.48	0.40	0.43	0.04	0.40
Travel Dist (mi)	1.2	8.5	86.2	1.8	1.1	5.9	104.6
Travel Time (hr)	0.3	5.8	126.6	2.5	0.1	0.3	135.6
Avg Speed (mph)	4	1	2	2	9	21	2
Fuel Used (gal)	0.1	1.4	30.5	0.6	0.1	0.4	33.0
Fuel Eff. (mpg)	14.6	6.1	2.8	2.9	21.2	16.0	3.2
HC Emissions (g)	0	7	88	0	0	4	100
CO Emissions (g)	8	173	2680	32	9	197	3100
NOx Emissions (g)	1	11	104	1	1	16	134
Vehicles Entered	14	100	452	9	49	260	884
Vehicles Exited	13	94	458	9	49	259	882
Hourly Exit Rate	13	94	458	9	49	259	882
Input Volume	12	98	545	11	52	262	980
% of Volume	108	96	84	82	94	99	90
Denied Entry Before	0	0	38	1	0	0	39
Denied Entry After	0	0	141	2	0	0	143

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.1	0.1	0.1
Total Delay (hr)	0.0	0.5	0.0	0.2	0.7	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Total Del/Veh (s)	9.9	6.1	2.5	10.1	7.8	5.0	13.6	14.5	7.2	14.2	12.7	4.5
Stop Delay (hr)	0.0	0.3	0.0	0.1	0.4	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Stop Del/Veh (s)	7.6	4.0	1.6	7.0	4.8	3.6	11.2	11.7	5.9	12.5	10.7	4.1
Total Stops	0	105	2	43	132	0	20	41	84	16	20	5
Stop/Veh	0.00	0.38	0.29	0.61	0.43	0.00	0.69	0.67	0.69	0.73	0.62	0.62
Travel Dist (mi)	0.2	59.1	1.6	19.4	84.6	0.3	1.6	3.5	6.9	1.5	2.2	0.5
Travel Time (hr)	0.0	2.9	0.1	1.0	4.1	0.0	0.2	0.4	0.6	0.2	0.2	0.0
Avg Speed (mph)	18	21	22	19	21	22	9	9	12	10	11	15
Fuel Used (gal)	0.0	1.9	0.0	0.6	2.6	0.0	0.1	0.2	0.3	0.1	0.1	0.0
Fuel Eff. (mpg)	31.2	32.0	33.7	32.3	32.3	35.7	21.9	21.4	25.5	24.0	24.1	31.5
HC Emissions (g)	0	11	0	3	17	0	0	1	2	0	1	0
CO Emissions (g)	1	295	5	87	429	1	18	41	78	9	29	3
NOx Emissions (g)	0	40	1	12	61	0	2	4	9	1	3	0
Vehicles Entered	1	274	7	70	302	1	29	61	120	22	32	7
Vehicles Exited	1	274	7	69	301	1	29	61	120	21	32	8
Hourly Exit Rate	1	274	7	69	301	1	29	61	120	21	32	8
Input Volume	2	267	8	71	307	1	28	58	114	19	31	8
% of Volume	50	103	88	97	98	100	104	105	105	111	103	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	2.1
Total Del/Veh (s)	8.3
Stop Delay (hr)	1.5
Stop Del/Veh (s)	5.9
Total Stops	468
Stop/Veh	0.50
Travel Dist (mi)	181.4
Travel Time (hr)	9.6
Avg Speed (mph)	19
Fuel Used (gal)	5.8
Fuel Eff. (mpg)	31.2
HC Emissions (g)	37
CO Emissions (g)	994
NOx Emissions (g)	133
Vehicles Entered	926
Vehicles Exited	924
Hourly Exit Rate	924
Input Volume	914
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.4	0.4
Total Del/Veh (s)	2.2	2.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	34.6	34.6
Travel Time (hr)	2.1	2.1
Avg Speed (mph)	16	16
Fuel Used (gal)	2.8	2.8
Fuel Eff. (mpg)	12.3	12.3
HC Emissions (g)	38	38
CO Emissions (g)	1688	1688
NOx Emissions (g)	138	138
Vehicles Entered	668	668
Vehicles Exited	666	666
Hourly Exit Rate	666	666
Input Volume	711	711
% of Volume	94	94
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.2	0.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	8.2	8.2
Travel Time (hr)	0.3	0.3
Avg Speed (mph)	29	29
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	34.5	34.5
HC Emissions (g)	2	2
CO Emissions (g)	45	45
NOx Emissions (g)	6	6
Vehicles Entered	108	108
Vehicles Exited	108	108
Hourly Exit Rate	108	108
Input Volume	110	110
% of Volume	98	98
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	115.6
Denied Del/Veh (s)	106.5
Total Delay (hr)	133.8
Total Del/Veh (s)	123.2
Stop Delay (hr)	124.0
Stop Del/Veh (s)	114.2
Total Stops	4609
Stop/Veh	1.18
Travel Dist (mi)	2110.9
Travel Time (hr)	326.7
Avg Speed (mph)	10
Fuel Used (gal)	128.6
Fuel Eff. (mpg)	16.4
HC Emissions (g)	859
CO Emissions (g)	25753
NOx Emissions (g)	2531
Vehicles Entered	3718
Vehicles Exited	3685
Hourly Exit Rate	3685
Input Volume	13237
% of Volume	28
Denied Entry Before	52
Denied Entry After	190

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	275.7	920.7	0.2	2
Commerce St.	7	10.1	12.5	0.0	6
Total		285.7	933.2	0.2	3

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.1	3.9	0.0	19
Total		1.1	3.9	0.0	19

Queuing and Blocking Report

2018 Buildout AM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	137	74	227	67	120	76	133	138	19	172	176	150
Average Queue (ft)	58	38	150	3	63	34	62	78	1	83	57	58
95th Queue (ft)	111	64	226	45	104	64	111	129	19	143	128	119
Link Distance (ft)	1223	1223				1023	1023			2291	2291	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	100		
Storage Blk Time (%)			4	0		0	2	4		5	2	
Queuing Penalty (veh)			0	0		0	2	17		8	4	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	128	265	174	307	327	133
Average Queue (ft)	59	132	104	289	179	62
95th Queue (ft)	111	227	210	321	291	106
Link Distance (ft)	809		278	1023	1023	
Upstream Blk Time (%)			20			
Queuing Penalty (veh)			175			
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	3	6	36			
Queuing Penalty (veh)	2	45	49			

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	819	94	58	172	161
Average Queue (ft)	249	743	73	46	73	54
95th Queue (ft)	252	955	86	61	144	124
Link Distance (ft)	776	58			278	
Upstream Blk Time (%)	66	53	3		0	
Queuing Penalty (veh)	0	353	0		0	
Storage Bay Dist (ft)	150		50	100		
Storage Blk Time (%)	82	0	56	5	4	2
Queuing Penalty (veh)	82	0	77	25	9	3

Queuing and Blocking Report

2018 Buildout AM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	196	451	322	122	79
Average Queue (ft)	190	434	220	95	18
95th Queue (ft)	199	533	431	111	67
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		93	37	60	3
Queuing Penalty (veh)		0	0	387	9
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	100				
Queuing Penalty (veh)	6				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	B39	NB	SB
Directions Served	L	R	T	TR	LT
Maximum Queue (ft)	131	360	80	1056	63
Average Queue (ft)	26	175	11	1020	23
95th Queue (ft)	115	418	82	1069	64
Link Distance (ft)		412	746	1001	51
Upstream Blk Time (%)		10		94	3
Queuing Penalty (veh)		0		0	10
Storage Bay Dist (ft)	75				
Storage Blk Time (%)		58			
Queuing Penalty (veh)		7			

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	140	178	137	67
Average Queue (ft)	61	85	65	28
95th Queue (ft)	114	150	110	58
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

2018 Buildout AM Peak

11/22/2015

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1271

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	5070	5024	5077	5120	5067	5064	5171
Vehs Exited	5025	5046	5057	5125	5033	5054	5144
Starting Vehs	209	263	264	240	242	239	254
Ending Vehs	254	241	284	235	276	249	281
Denied Entry Before	123	134	47	63	62	47	98
Denied Entry After	259	260	191	191	158	118	230
Travel Distance (mi)	2896	2888	2897	2939	2915	2916	2940
Travel Time (hr)	429.5	423.2	390.9	372.3	332.8	335.8	423.1
Total Delay (hr)	323.3	317.1	284.8	264.6	225.9	228.7	315.0
Total Stops	6618	6399	7123	6918	6498	6603	6327
Fuel Used (gal)	172.5	171.2	164.0	161.0	150.7	151.5	172.0

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	5085	5097	5074	5089
Vehs Exited	5086	5089	5066	5072
Starting Vehs	269	248	243	246
Ending Vehs	268	256	251	260
Denied Entry Before	113	117	81	87
Denied Entry After	318	248	266	222
Travel Distance (mi)	2895	2900	2897	2908
Travel Time (hr)	487.1	433.2	440.9	406.9
Total Delay (hr)	380.7	327.0	334.4	300.1
Total Stops	6405	6846	6213	6595
Fuel Used (gal)	186.4	173.9	175.4	167.9

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	5070	5024	5077	5120	5067	5064	5171
Vehs Exited	5025	5046	5057	5125	5033	5054	5144
Starting Vehs	209	263	264	240	242	239	254
Ending Vehs	254	241	284	235	276	249	281
Denied Entry Before	123	134	47	63	62	47	98
Denied Entry After	259	260	191	191	158	118	230
Travel Distance (mi)	2896	2888	2897	2939	2915	2916	2940
Travel Time (hr)	429.5	423.2	390.9	372.3	332.8	335.8	423.1
Total Delay (hr)	323.3	317.1	284.8	264.6	225.9	228.7	315.0
Total Stops	6618	6399	7123	6918	6498	6603	6327
Fuel Used (gal)	172.5	171.2	164.0	161.0	150.7	151.5	172.0

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	5085	5097	5074	5089
Vehs Exited	5086	5089	5066	5072
Starting Vehs	269	248	243	246
Ending Vehs	268	256	251	260
Denied Entry Before	113	117	81	87
Denied Entry After	318	248	266	222
Travel Distance (mi)	2895	2900	2897	2908
Travel Time (hr)	487.1	433.2	440.9	406.9
Total Delay (hr)	380.7	327.0	334.4	300.1
Total Stops	6405	6846	6213	6595
Fuel Used (gal)	186.4	173.9	175.4	167.9

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.6	0.3	0.0	0.0	0.0	0.1	0.0	0.0	1.1
Denied Del/Veh (s)	0.2	0.2	6.6	2.9	0.1	0.0	0.1	1.3	0.3	0.3	1.3
Total Delay (hr)	2.9	0.7	4.9	1.3	1.1	2.1	0.5	3.4	3.7	1.3	22.0
Total Del/Veh (s)	50.6	11.4	53.4	13.3	20.4	19.7	4.7	28.9	24.1	18.6	23.8
Stop Delay (hr)	2.7	0.7	4.6	1.2	0.9	1.8	0.0	2.4	2.6	0.9	17.8
Stop Del/Veh (s)	47.1	10.3	49.9	12.4	16.7	16.3	0.3	20.6	16.7	12.8	19.2
Total Stops	169	215	256	303	154	134	1	358	286	125	2001
Stop/Veh	0.83	0.92	0.77	0.84	0.78	0.34	0.00	0.84	0.51	0.51	0.60
Travel Dist (mi)	46.4	53.4	13.3	14.4	39.4	77.1	72.9	182.2	239.2	105.5	843.7
Travel Time (hr)	4.8	3.0	6.1	2.4	2.6	4.9	3.2	9.9	11.8	5.0	53.7
Avg Speed (mph)	10	18	2	7	15	16	23	19	20	21	16
Fuel Used (gal)	2.0	1.7	1.8	0.8	1.6	3.4	2.6	5.9	7.9	3.2	31.0
Fuel Eff. (mpg)	22.9	31.8	7.4	18.1	24.1	22.6	28.5	30.6	30.2	32.5	27.2
HC Emissions (g)	10	13	7	5	15	42	29	52	73	31	278
CO Emissions (g)	296	326	237	155	523	1346	923	1104	1766	688	7364
NOx Emissions (g)	35	42	21	18	52	135	99	153	222	89	866
Vehicles Entered	200	230	330	358	196	384	380	413	546	241	3278
Vehicles Exited	199	230	328	357	196	384	381	417	543	242	3277
Hourly Exit Rate	199	230	328	357	196	384	381	417	543	242	3277
Input Volume	200	230	322	367	210	419	414	416	551	239	3368
% of Volume	100	100	102	97	93	92	92	100	99	101	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.1	0.0	0.2
Denied Del/Veh (s)	3.4	0.5	0.0	0.0	0.3	0.3	0.4
Total Delay (hr)	2.2	1.6	1.2	3.9	10.2	1.0	20.0
Total Del/Veh (s)	87.0	16.4	61.6	22.6	51.8	7.5	31.4
Stop Delay (hr)	2.1	1.4	1.1	3.0	7.8	0.5	15.9
Stop Del/Veh (s)	83.4	14.8	57.1	17.3	39.6	4.2	25.0
Total Stops	91	313	84	318	564	242	1612
Stop/Veh	0.99	0.91	1.24	0.52	0.80	0.52	0.70
Travel Dist (mi)	13.9	52.6	4.4	39.9	139.3	93.0	343.2
Travel Time (hr)	2.8	3.7	1.4	5.4	15.2	4.7	33.0
Avg Speed (mph)	5	15	3	7	9	20	10
Fuel Used (gal)	0.9	1.8	0.4	2.6	7.1	3.4	16.2
Fuel Eff. (mpg)	14.7	30.0	10.2	15.6	19.7	27.4	21.2
HC Emissions (g)	6	17	1	18	52	41	135
CO Emissions (g)	195	510	57	536	1647	1285	4230
NOx Emissions (g)	15	50	6	70	184	135	460
Vehicles Entered	90	343	66	605	681	455	2240
Vehicles Exited	91	342	67	605	688	456	2249
Hourly Exit Rate	91	342	67	605	688	456	2249
Input Volume	86	338	86	691	680	458	2339
% of Volume	106	101	78	88	101	100	96
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	94.6	48.1	0.0	0.0	0.0	0.0	142.7
Denied Del/Veh (s)	809.0	813.3	0.0	0.0	0.0	0.0	270.1
Total Delay (hr)	23.6	7.9	1.8	0.2	2.4	3.5	39.5
Total Del/Veh (s)	279.1	188.2	16.5	7.6	28.0	27.0	81.9
Stop Delay (hr)	22.2	7.4	1.5	0.2	2.0	2.8	36.1
Stop Del/Veh (s)	262.3	175.4	14.2	6.8	22.7	21.3	74.8
Total Stops	557	216	101	104	276	211	1465
Stop/Veh	1.83	1.42	0.26	1.00	0.88	0.45	0.84
Travel Dist (mi)	41.9	21.6	9.3	2.3	20.6	30.3	126.0
Travel Time (hr)	119.7	56.9	2.1	0.4	3.3	4.6	187.0
Avg Speed (mph)	2	2	4	6	6	7	3
Fuel Used (gal)	28.4	13.5	0.9	0.1	1.3	2.0	46.2
Fuel Eff. (mpg)	1.5	1.6	10.4	15.7	15.8	15.1	2.7
HC Emissions (g)	53	54	7	1	7	14	136
CO Emissions (g)	2052	1374	190	27	216	418	4277
NOx Emissions (g)	69	62	28	4	28	53	245
Vehicles Entered	282	146	386	103	312	467	1696
Vehicles Exited	285	143	386	104	311	468	1697
Hourly Exit Rate	285	143	386	104	311	468	1697
Input Volume	367	184	409	112	311	455	1838
% of Volume	78	78	94	93	100	103	92
Denied Entry Before	56	29	0	0	0	0	85
Denied Entry After	139	67	0	0	0	0	206

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	13.6	3.8	0.0	2.8	0.5	0.0	20.7
Total Del/Veh (s)	2446.2	1133.5	25.0	20.8	2.9	1.4	65.6
Stop Delay (hr)	13.6	3.8	0.0	2.6	0.2	0.0	20.2
Stop Del/Veh (s)	2446.9	1133.1	24.6	19.1	1.4	1.0	64.0
Total Stops	8	10	2	128	62	2	212
Stop/Veh	0.40	0.83	0.50	0.26	0.11	0.08	0.19
Travel Dist (mi)	0.6	0.6	0.1	9.4	13.4	0.6	24.6
Travel Time (hr)	13.6	3.8	0.0	3.2	1.1	0.0	21.8
Avg Speed (mph)	0	0	2	3	13	12	1
Fuel Used (gal)	3.1	0.9	0.0	1.2	0.9	0.0	6.1
Fuel Eff. (mpg)	0.2	0.7	7.0	7.7	15.6	23.2	4.0
HC Emissions (g)	0	0	0	9	8	0	18
CO Emissions (g)	149	44	1	208	245	8	655
NOx Emissions (g)	0	0	0	31	36	1	69
Vehicles Entered	10	10	4	485	585	25	1119
Vehicles Exited	5	7	4	485	585	25	1111
Hourly Exit Rate	5	7	4	485	585	25	1111
Input Volume	22	19	4	499	612	27	1183
% of Volume	23	37	100	97	96	93	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	5.5	0.2	0.0	0.0	5.7
Denied Del/Veh (s)	0.0	0.0	49.6	51.9	0.0	0.0	18.5
Total Delay (hr)	0.3	6.3	24.3	0.6	0.1	0.2	31.9
Total Del/Veh (s)	140.8	228.5	205.9	186.0	5.3	1.4	101.1
Stop Delay (hr)	0.3	6.4	23.7	0.6	0.1	0.1	31.1
Stop Del/Veh (s)	138.4	231.3	200.3	182.7	3.9	0.4	98.7
Total Stops	11	77	346	8	34	20	496
Stop/Veh	1.57	0.77	0.81	0.67	0.40	0.04	0.44
Travel Dist (mi)	0.6	8.2	74.8	2.1	1.9	11.4	99.0
Travel Time (hr)	0.3	6.7	32.3	0.9	0.2	0.6	41.0
Avg Speed (mph)	2	1	3	3	9	19	3
Fuel Used (gal)	0.1	1.6	8.8	0.2	0.1	0.8	11.6
Fuel Eff. (mpg)	8.1	5.1	8.4	8.9	20.7	14.9	8.5
HC Emissions (g)	0	4	33	0	1	9	47
CO Emissions (g)	7	153	1061	20	23	344	1608
NOx Emissions (g)	1	10	69	1	3	37	121
Vehicles Entered	7	94	394	12	84	508	1099
Vehicles Exited	7	93	395	11	84	508	1098
Hourly Exit Rate	7	93	395	11	84	508	1098
Input Volume	9	97	406	11	89	543	1155
% of Volume	78	96	97	100	94	94	95
Denied Entry Before	0	0	2	0	0	0	2
Denied Entry After	0	0	6	0	0	0	6

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.1	0.2
Total Delay (hr)	0.0	1.0	0.1	0.4	1.5	0.0	0.2	0.4	0.3	0.2	0.2	0.0
Total Del/Veh (s)	12.0	8.2	5.4	17.2	13.9	13.2	17.6	17.8	10.8	20.6	17.2	8.8
Stop Delay (hr)	0.0	0.6	0.0	0.3	1.1	0.0	0.2	0.3	0.3	0.2	0.2	0.0
Stop Del/Veh (s)	8.5	4.8	3.2	13.2	9.5	9.7	14.8	14.6	9.2	18.5	14.8	7.9
Total Stops	6	185	16	73	233	4	40	55	87	30	37	13
Stop/Veh	0.75	0.42	0.41	0.81	0.58	0.80	0.78	0.73	0.76	0.81	0.71	0.76
Travel Dist (mi)	1.7	94.7	8.2	25.0	110.4	1.3	2.9	4.2	6.5	2.5	3.5	1.2
Travel Time (hr)	0.1	4.9	0.4	1.5	6.0	0.1	0.4	0.5	0.7	0.3	0.4	0.1
Avg Speed (mph)	18	20	20	17	18	18	8	8	10	8	9	12
Fuel Used (gal)	0.1	3.0	0.2	0.8	3.6	0.0	0.2	0.2	0.3	0.1	0.2	0.0
Fuel Eff. (mpg)	31.6	31.8	34.0	31.1	31.0	32.0	18.8	18.6	22.1	19.7	20.6	25.1
HC Emissions (g)	0	22	3	5	27	0	1	1	2	1	1	0
CO Emissions (g)	5	545	64	125	621	4	34	49	72	26	46	9
NOx Emissions (g)	1	76	9	17	89	0	4	5	8	3	5	1
Vehicles Entered	8	438	38	90	394	5	51	74	114	37	51	17
Vehicles Exited	8	437	38	89	395	5	51	74	114	37	51	17
Hourly Exit Rate	8	437	38	89	395	5	51	74	114	37	51	17
Input Volume	9	439	37	89	384	5	50	74	110	39	54	16
% of Volume	89	100	103	100	103	100	102	100	104	95	94	106
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	4.6
Total Del/Veh (s)	12.3
Stop Delay (hr)	3.3
Stop Del/Veh (s)	8.9
Total Stops	779
Stop/Veh	0.59
Travel Dist (mi)	262.2
Travel Time (hr)	15.4
Avg Speed (mph)	17
Fuel Used (gal)	8.7
Fuel Eff. (mpg)	30.1
HC Emissions (g)	63
CO Emissions (g)	1600
NOx Emissions (g)	218
Vehicles Entered	1317
Vehicles Exited	1316
Hourly Exit Rate	1316
Input Volume	1306
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.5	0.5
Total Del/Veh (s)	2.2	2.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	41.7	41.7
Travel Time (hr)	2.5	2.5
Avg Speed (mph)	16	16
Fuel Used (gal)	3.3	3.3
Fuel Eff. (mpg)	12.5	12.5
HC Emissions (g)	44	44
CO Emissions (g)	1921	1921
NOx Emissions (g)	164	164
Vehicles Entered	798	798
Vehicles Exited	798	798
Hourly Exit Rate	798	798
Input Volume	830	830
% of Volume	96	96
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.2	0.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	13.5	13.5
Travel Time (hr)	0.5	0.5
Avg Speed (mph)	29	29
Fuel Used (gal)	0.4	0.4
Fuel Eff. (mpg)	34.3	34.3
HC Emissions (g)	4	4
CO Emissions (g)	89	89
NOx Emissions (g)	12	12
Vehicles Entered	178	178
Vehicles Exited	178	178
Hourly Exit Rate	178	178
Input Volume	180	180
% of Volume	99	99
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	152.4
Denied Del/Veh (s)	103.3
Total Delay (hr)	147.8
Total Del/Veh (s)	99.8
Stop Delay (hr)	130.9
Stop Del/Veh (s)	88.4
Total Stops	6595
Stop/Veh	1.24
Travel Dist (mi)	2908.5
Travel Time (hr)	406.9
Avg Speed (mph)	11
Fuel Used (gal)	167.9
Fuel Eff. (mpg)	17.3
HC Emissions (g)	1212
CO Emissions (g)	35588
NOx Emissions (g)	3696
Vehicles Entered	5089
Vehicles Exited	5072
Hourly Exit Rate	5072
Input Volume	17225
% of Volume	29
Denied Entry Before	87
Denied Entry After	222

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	205.9	274.0	0.2	3
Commerce St.	7	10.9	13.3	0.0	5
Total		216.8	287.3	0.2	3

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.4	4.2	0.0	17
Total		1.4	4.2	0.0	17

Queuing and Blocking Report

2018 Buildout PM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	311	144	235	229	217	159	154	167	79	200	447	362
Average Queue (ft)	151	71	201	85	107	71	61	72	3	161	210	192
95th Queue (ft)	257	117	255	263	189	124	125	136	40	236	388	323
Link Distance (ft)	1224	1224				1020	1020			2313	2313	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	100		
Storage Blk Time (%)			21	0		4	3	4		25	17	
Queuing Penalty (veh)			0	0		9	5	18		70	72	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	188	252	174	308	834	518
Average Queue (ft)	91	111	77	296	468	111
95th Queue (ft)	167	202	175	310	800	358
Link Distance (ft)	808		278	1020	1020	
Upstream Blk Time (%)			17	0		
Queuing Penalty (veh)			128	1		
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	1	2	7	31		
Queuing Penalty (veh)	3	1	48	26		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	824	96	58	200	298
Average Queue (ft)	249	795	71	44	138	171
95th Queue (ft)	252	810	86	64	229	315
Link Distance (ft)	776	58			278	
Upstream Blk Time (%)		86	56	5		5
Queuing Penalty (veh)		0	293	0		40
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	83	3	58	6	17	29
Queuing Penalty (veh)	153	10	65	25	77	90

Queuing and Blocking Report

2018 Buildout PM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	198	453	304	125	91
Average Queue (ft)	181	348	145	95	45
95th Queue (ft)	221	613	385	113	102
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		66	24	62	7
Queuing Penalty (veh)		0	0	311	46
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	99				
Queuing Penalty (veh)	19				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	B39	NB	SB
Directions Served	L	R	T	TR	LT
Maximum Queue (ft)	117	348	21	964	77
Average Queue (ft)	21	196	3	716	37
95th Queue (ft)	105	446	25	1227	79
Link Distance (ft)		412	746	1001	51
Upstream Blk Time (%)		10		34	6
Queuing Penalty (veh)		0		0	41
Storage Bay Dist (ft)	75				
Storage Blk Time (%)	62				
Queuing Penalty (veh)	6				

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	224	300	174	95
Average Queue (ft)	105	139	83	47
95th Queue (ft)	181	251	140	84
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

2018 Buildout PM Peak

11/22/2015

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1559

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3794	3757	3777	3678	3595	3654	3683
Vehs Exited	3767	3733	3739	3646	3600	3624	3710
Starting Vehs	206	182	177	197	234	200	232
Ending Vehs	233	206	215	229	229	230	205
Denied Entry Before	72	128	28	0	35	65	34
Denied Entry After	223	288	145	135	158	146	284
Travel Distance (mi)	2157	2126	2155	2075	2069	2097	2086
Travel Time (hr)	341.8	424.6	299.4	287.3	322.4	303.8	388.9
Total Delay (hr)	262.5	346.5	220.1	211.2	246.3	226.6	312.1
Total Stops	4541	4289	4377	4393	4375	4354	4319
Fuel Used (gal)	133.5	151.2	123.5	118.7	126.7	122.9	142.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3681	3669	3616	3691
Vehs Exited	3693	3651	3603	3677
Starting Vehs	223	183	199	201
Ending Vehs	211	201	212	213
Denied Entry Before	72	40	64	54
Denied Entry After	223	164	176	192
Travel Distance (mi)	2092	2088	2062	2101
Travel Time (hr)	343.6	301.3	348.5	336.2
Total Delay (hr)	266.7	224.7	272.8	259.0
Total Stops	4329	4398	4203	4359
Fuel Used (gal)	132.2	122.2	132.1	130.6

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3794	3757	3777	3678	3595	3654	3683
Vehs Exited	3767	3733	3739	3646	3600	3624	3710
Starting Vehs	206	182	177	197	234	200	232
Ending Vehs	233	206	215	229	229	230	205
Denied Entry Before	72	128	28	0	35	65	34
Denied Entry After	223	288	145	135	158	146	284
Travel Distance (mi)	2157	2126	2155	2075	2069	2097	2086
Travel Time (hr)	341.8	424.6	299.4	287.3	322.4	303.8	388.9
Total Delay (hr)	262.5	346.5	220.1	211.2	246.3	226.6	312.1
Total Stops	4541	4289	4377	4393	4375	4354	4319
Fuel Used (gal)	133.5	151.2	123.5	118.7	126.7	122.9	142.5

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3681	3669	3616	3691
Vehs Exited	3693	3651	3603	3677
Starting Vehs	223	183	199	201
Ending Vehs	211	201	212	213
Denied Entry Before	72	40	64	54
Denied Entry After	223	164	176	192
Travel Distance (mi)	2092	2088	2062	2101
Travel Time (hr)	343.6	301.3	348.5	336.2
Total Delay (hr)	266.7	224.7	272.8	259.0
Total Stops	4329	4398	4203	4359
Fuel Used (gal)	132.2	122.2	132.1	130.6

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4
Denied Del/Veh (s)	0.2	0.1	4.5	0.8	0.0	0.0	0.0	1.4	0.2	0.2	0.7
Total Delay (hr)	1.1	0.2	3.1	0.6	0.3	1.0	0.4	2.1	0.7	0.1	9.6
Total Del/Veh (s)	55.1	6.9	52.0	10.7	11.0	6.1	3.6	27.4	7.0	3.9	14.5
Stop Delay (hr)	1.1	0.2	2.9	0.6	0.2	0.6	0.1	1.8	0.4	0.0	7.9
Stop Del/Veh (s)	52.8	6.1	49.1	9.9	8.2	3.8	0.7	23.2	4.2	2.2	12.0
Total Stops	64	99	175	198	56	90	46	218	80	14	1040
Stop/Veh	0.86	0.97	0.83	0.93	0.56	0.16	0.12	0.78	0.22	0.22	0.44
Travel Dist (mi)	16.8	23.2	8.0	8.1	20.0	110.1	78.3	118.3	154.7	26.8	564.2
Travel Time (hr)	1.8	1.2	3.7	1.1	1.1	4.9	3.5	6.3	5.9	1.0	30.5
Avg Speed (mph)	9	20	2	8	19	23	23	19	26	26	19
Fuel Used (gal)	0.8	0.7	1.1	0.4	0.8	4.4	2.8	3.8	4.7	0.8	20.2
Fuel Eff. (mpg)	21.8	32.6	7.5	21.7	25.6	24.8	27.9	31.1	33.2	35.1	28.0
HC Emissions (g)	3	7	4	2	6	53	35	35	47	10	201
CO Emissions (g)	96	152	148	69	251	1752	1065	769	1016	197	5516
NOx Emissions (g)	11	21	12	9	23	175	116	99	134	28	628
Vehicles Entered	73	100	212	212	99	559	391	274	358	62	2340
Vehicles Exited	71	100	206	212	100	562	392	273	360	62	2338
Hourly Exit Rate	71	100	206	212	100	562	392	273	360	62	2338
Input Volume	70	96	209	218	110	607	434	277	361	64	2446
% of Volume	101	104	99	97	91	93	90	99	100	97	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.3	0.6	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	1.4	2.4	1.3	5.1	2.1	0.3	12.5
Total Del/Veh (s)	65.7	19.8	38.4	29.0	19.3	4.3	23.3
Stop Delay (hr)	1.3	2.2	1.1	4.2	1.6	0.2	10.6
Stop Del/Veh (s)	62.2	18.2	33.9	23.9	14.9	2.3	19.7
Total Stops	69	387	131	320	159	122	1188
Stop/Veh	0.93	0.90	1.09	0.51	0.40	0.43	0.61
Travel Dist (mi)	11.4	65.5	7.9	41.0	76.8	58.8	261.4
Travel Time (hr)	1.8	5.0	1.6	6.6	4.9	2.7	22.5
Avg Speed (mph)	6	13	5	6	16	22	12
Fuel Used (gal)	0.7	2.2	0.6	2.9	3.1	2.0	11.4
Fuel Eff. (mpg)	16.9	29.6	13.6	14.1	24.7	29.9	22.9
HC Emissions (g)	2	18	3	21	28	25	96
CO Emissions (g)	136	564	97	615	830	704	2947
NOx Emissions (g)	9	53	11	76	92	78	319
Vehicles Entered	74	426	118	620	386	280	1904
Vehicles Exited	72	426	118	623	390	282	1911
Hourly Exit Rate	72	426	118	623	390	282	1911
Input Volume	71	420	136	731	387	279	2024
% of Volume	101	101	87	85	101	101	94
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	22.5	6.6	0.0	0.0	0.0	0.0	29.1
Denied Del/Veh (s)	235.7	233.5	0.0	0.0	0.2	0.0	73.8
Total Delay (hr)	24.8	4.5	1.8	0.2	1.2	0.7	33.2
Total Del/Veh (s)	271.5	172.2	14.7	5.5	23.8	10.9	85.2
Stop Delay (hr)	23.5	4.2	1.5	0.2	1.0	0.5	30.8
Stop Del/Veh (s)	256.7	160.8	12.4	4.6	20.1	7.8	79.1
Total Stops	542	124	107	122	155	66	1116
Stop/Veh	1.65	1.32	0.25	1.00	0.86	0.27	0.80
Travel Dist (mi)	44.6	13.4	10.4	2.7	11.8	15.6	98.5
Travel Time (hr)	48.9	11.6	2.1	0.4	1.7	1.3	66.0
Avg Speed (mph)	2	3	5	8	7	12	3
Fuel Used (gal)	12.3	3.0	1.0	0.2	0.7	0.9	17.9
Fuel Eff. (mpg)	3.6	4.5	10.8	16.8	16.3	18.3	5.5
HC Emissions (g)	42	12	7	1	5	7	74
CO Emissions (g)	1200	361	199	35	152	267	2214
NOx Emissions (g)	69	24	30	6	19	30	179
Vehicles Entered	303	90	432	122	179	240	1366
Vehicles Exited	306	89	432	122	180	242	1371
Hourly Exit Rate	306	89	432	122	180	242	1371
Input Volume	339	100	527	138	179	238	1521
% of Volume	90	89	82	88	101	102	90
Denied Entry Before	10	2	0	0	0	0	12
Denied Entry After	40	12	0	0	0	0	52

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	15.5	1.8	0.0	2.9	0.2	0.0	20.3
Total Del/Veh (s)	2782.7	2148.3	13.3	18.7	2.0	0.9	80.1
Stop Delay (hr)	15.5	1.8	0.0	2.6	0.1	0.0	19.9
Stop Del/Veh (s)	2783.2	2148.5	12.0	16.8	1.0	0.6	78.6
Total Stops	5	1	2	146	21	1	176
Stop/Veh	0.25	0.33	0.67	0.26	0.07	0.03	0.19
Travel Dist (mi)	0.4	0.1	0.1	10.8	6.8	0.7	18.8
Travel Time (hr)	15.5	1.8	0.0	3.3	0.5	0.1	21.1
Avg Speed (mph)	0	0	4	3	14	12	1
Fuel Used (gal)	3.4	0.4	0.0	1.3	0.4	0.0	5.6
Fuel Eff. (mpg)	0.1	0.2	10.6	8.2	16.7	25.7	3.4
HC Emissions (g)	26	0	0	9	4	0	39
CO Emissions (g)	467	20	1	215	141	8	851
NOx Emissions (g)	18	0	0	34	17	1	71
Vehicles Entered	6	1	3	553	298	31	892
Vehicles Exited	3	1	3	553	299	31	890
Hourly Exit Rate	3	1	3	553	299	31	890
Input Volume	27	6	4	639	308	29	1013
% of Volume	11	17	75	87	97	107	88
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	82.9	2.1	0.0	0.0	85.0
Denied Del/Veh (s)	0.0	0.0	514.6	568.2	0.0	0.0	304.6
Total Delay (hr)	0.6	8.8	37.9	0.8	0.1	0.1	48.2
Total Del/Veh (s)	148.0	300.2	270.6	256.2	5.7	1.1	185.8
Stop Delay (hr)	0.6	8.9	37.3	0.8	0.1	0.0	47.6
Stop Del/Veh (s)	146.3	304.6	266.2	255.5	4.3	0.5	183.7
Total Stops	20	73	221	4	20	12	350
Stop/Veh	1.43	0.70	0.44	0.36	0.42	0.05	0.38
Travel Dist (mi)	1.2	8.4	87.3	1.8	1.1	5.7	105.5
Travel Time (hr)	0.6	9.1	123.7	2.9	0.1	0.3	136.8
Avg Speed (mph)	2	1	2	2	8	20	2
Fuel Used (gal)	0.2	2.2	29.9	0.7	0.1	0.4	33.3
Fuel Eff. (mpg)	7.6	3.9	2.9	2.6	21.5	15.8	3.2
HC Emissions (g)	0	6	80	0	0	4	91
CO Emissions (g)	13	202	2552	37	11	195	3009
NOx Emissions (g)	1	13	96	1	1	16	128
Vehicles Entered	14	97	459	10	48	252	880
Vehicles Exited	14	96	460	9	48	252	879
Hourly Exit Rate	14	96	460	9	48	252	879
Input Volume	12	98	545	11	52	262	980
% of Volume	117	98	84	82	92	96	90
Denied Entry Before	0	0	40	1	0	0	41
Denied Entry After	0	0	121	3	0	0	124

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.6	0.3	0.2	1.5	0.4	0.1	0.3	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.2	0.5	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Total Del/Veh (s)	13.8	5.7	2.9	9.5	6.0	3.7	12.5	13.8	6.6	13.0	11.7	5.3
Stop Delay (hr)	0.0	0.3	0.0	0.1	0.3	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Stop Del/Veh (s)	11.3	3.6	1.6	6.5	3.4	2.5	10.2	11.1	5.4	11.2	9.6	4.8
Total Stops	1	104	4	43	117	1	19	41	86	17	21	6
Stop/Veh	1.00	0.39	0.44	0.65	0.38	0.50	0.70	0.73	0.74	0.77	0.68	0.67
Travel Dist (mi)	0.2	57.4	1.8	18.2	86.4	0.5	1.5	3.2	6.5	1.5	2.1	0.6
Travel Time (hr)	0.0	2.8	0.1	0.9	4.0	0.0	0.2	0.3	0.5	0.1	0.2	0.0
Avg Speed (mph)	17	21	21	20	22	22	9	9	12	10	11	14
Fuel Used (gal)	0.0	1.8	0.1	0.6	2.7	0.0	0.1	0.1	0.3	0.1	0.1	0.0
Fuel Eff. (mpg)	29.2	32.1	35.1	32.1	32.3	33.6	22.5	22.0	25.8	24.4	25.2	32.3
HC Emissions (g)	0	12	0	2	20	0	0	1	2	0	1	0
CO Emissions (g)	1	308	6	67	479	1	15	31	74	10	22	3
NOx Emissions (g)	0	43	1	8	69	0	2	3	8	1	3	0
Vehicles Entered	1	266	8	65	308	2	27	56	115	22	31	9
Vehicles Exited	1	266	9	65	308	2	27	56	115	22	31	9
Hourly Exit Rate	1	266	9	65	308	2	27	56	115	22	31	9
Input Volume	2	267	8	71	307	1	28	58	114	19	31	8
% of Volume	50	100	112	92	100	200	96	97	101	116	100	112
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	1.8
Total Del/Veh (s)	7.2
Stop Delay (hr)	1.3
Stop Del/Veh (s)	5.0
Total Stops	460
Stop/Veh	0.50
Travel Dist (mi)	179.9
Travel Time (hr)	9.3
Avg Speed (mph)	20
Fuel Used (gal)	5.7
Fuel Eff. (mpg)	31.4
HC Emissions (g)	39
CO Emissions (g)	1018
NOx Emissions (g)	138
Vehicles Entered	910
Vehicles Exited	911
Hourly Exit Rate	911
Input Volume	914
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.5	0.5
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.2	0.2
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	33.2	33.2
Travel Time (hr)	1.8	1.8
Avg Speed (mph)	18	18
Fuel Used (gal)	2.8	2.8
Fuel Eff. (mpg)	11.9	11.9
HC Emissions (g)	42	42
CO Emissions (g)	1836	1836
NOx Emissions (g)	148	148
Vehicles Entered	664	664
Vehicles Exited	662	662
Hourly Exit Rate	662	662
Input Volume	711	711
% of Volume	93	93
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.1	0.1
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	7.9	7.9
Travel Time (hr)	0.3	0.3
Avg Speed (mph)	29	29
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	34.9	34.9
HC Emissions (g)	2	2
CO Emissions (g)	36	36
NOx Emissions (g)	5	5
Vehicles Entered	105	105
Vehicles Exited	105	105
Hourly Exit Rate	105	105
Input Volume	110	110
% of Volume	95	95
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	121.2
Denied Del/Veh (s)	112.3
Total Delay (hr)	137.8
Total Del/Veh (s)	127.5
Stop Delay (hr)	129.1
Stop Del/Veh (s)	119.4
Total Stops	4359
Stop/Veh	1.12
Travel Dist (mi)	2100.8
Travel Time (hr)	336.2
Avg Speed (mph)	10
Fuel Used (gal)	130.6
Fuel Eff. (mpg)	16.1
HC Emissions (g)	916
CO Emissions (g)	26775
NOx Emissions (g)	2632
Vehicles Entered	3691
Vehicles Exited	3677
Hourly Exit Rate	3677
Input Volume	13237
% of Volume	28
Denied Entry Before	54
Denied Entry After	192

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	270.6	883.7	0.2	2
Commerce St.	7	10.1	12.5	0.0	6
Total		280.6	896.2	0.2	3

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.1	4.0	0.0	18
Total		1.1	4.0	0.0	18

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	L	T
Maximum Queue (ft)	136	84	215	149	147	82	122	136	106	114	137	121
Average Queue (ft)	64	41	150	9	67	30	31	50	28	50	72	42
95th Queue (ft)	119	70	220	80	114	65	85	100	71	96	114	96
Link Distance (ft)	1219	1219				1010	1010					2280
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	400	400	
Storage Blk Time (%)			4	0		0	0	1	0			
Queuing Penalty (veh)			0	1		0	0	3	0			

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	SB
Directions Served	TR
Maximum Queue (ft)	119
Average Queue (ft)	43
95th Queue (ft)	96
Link Distance (ft)	2280
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	158	279	174	308	306	103
Average Queue (ft)	66	136	98	295	143	47
95th Queue (ft)	125	234	204	313	260	81
Link Distance (ft)	809		278	1010	1010	
Upstream Blk Time (%)			29			
Queuing Penalty (veh)			248			
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	4	4	39		
Queuing Penalty (veh)	0	3	31	54		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	818	98	58	179	209
Average Queue (ft)	248	771	73	45	79	62
95th Queue (ft)	255	921	87	62	155	151
Link Distance (ft)		776	58			278
Upstream Blk Time (%)		80	53	4		0
Queuing Penalty (veh)		0	352	0		2
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	83		56	5	5	2
Queuing Penalty (veh)	83		77	27	13	4

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	194	432	282	124	80
Average Queue (ft)	181	378	232	95	19
95th Queue (ft)	230	620	461	111	67
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		80	47	60	2
Queuing Penalty (veh)		0	0	383	8
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	97				
Queuing Penalty (veh)	6				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	B39	NB	SB
Directions Served	L	R	T	TR	LT
Maximum Queue (ft)	148	406	98	1056	66
Average Queue (ft)	40	256	18	1021	25
95th Queue (ft)	149	536	91	1046	68
Link Distance (ft)		412	746	1001	51
Upstream Blk Time (%)		26		94	4
Queuing Penalty (veh)		0		0	12
Storage Bay Dist (ft)	75				
Storage Blk Time (%)	0	76			
Queuing Penalty (veh)	0	9			

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	15	131	68	131	131	64
Average Queue (ft)	1	60	28	64	60	28
95th Queue (ft)	9	108	60	112	102	58
Link Distance (ft)		1140		1479		352
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		100			
Storage Blk Time (%)		7	0	1		
Queuing Penalty (veh)		0	0	1		

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1315

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4928	5125	5024	5104	4913	5043	5239
Vehs Exited	4908	5139	5054	5133	4958	5100	5206
Starting Vehs	253	277	275	282	286	270	263
Ending Vehs	273	263	245	253	241	213	296
Denied Entry Before	96	70	49	81	74	53	48
Denied Entry After	238	211	212	134	184	146	167
Travel Distance (mi)	2866	2970	2907	2989	2895	2954	3012
Travel Time (hr)	404.5	395.4	368.0	383.2	397.1	328.0	367.2
Total Delay (hr)	299.1	286.1	260.8	273.6	290.9	219.1	256.1
Total Stops	6663	6624	6433	7276	6642	6529	6758
Fuel Used (gal)	165.8	166.7	159.4	164.3	165.4	150.4	161.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	5170	5172	5098	5081
Vehs Exited	5201	5178	5086	5098
Starting Vehs	307	254	245	270
Ending Vehs	276	248	257	253
Denied Entry Before	74	48	30	61
Denied Entry After	185	208	177	185
Travel Distance (mi)	2977	3021	2962	2955
Travel Time (hr)	397.7	412.1	357.0	381.0
Total Delay (hr)	288.3	301.1	248.0	272.3
Total Stops	6713	6844	6945	6738
Fuel Used (gal)	168.0	171.8	157.8	163.1

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	4928	5125	5024	5104	4913	5043	5239
Vehs Exited	4908	5139	5054	5133	4958	5100	5206
Starting Vehs	253	277	275	282	286	270	263
Ending Vehs	273	263	245	253	241	213	296
Denied Entry Before	96	70	49	81	74	53	48
Denied Entry After	238	211	212	134	184	146	167
Travel Distance (mi)	2866	2970	2907	2989	2895	2954	3012
Travel Time (hr)	404.5	395.4	368.0	383.2	397.1	328.0	367.2
Total Delay (hr)	299.1	286.1	260.8	273.6	290.9	219.1	256.1
Total Stops	6663	6624	6433	7276	6642	6529	6758
Fuel Used (gal)	165.8	166.7	159.4	164.3	165.4	150.4	161.5

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	5170	5172	5098	5081
Vehs Exited	5201	5178	5086	5098
Starting Vehs	307	254	245	270
Ending Vehs	276	248	257	253
Denied Entry Before	74	48	30	61
Denied Entry After	185	208	177	185
Travel Distance (mi)	2977	3021	2962	2955
Travel Time (hr)	397.7	412.1	357.0	381.0
Total Delay (hr)	288.3	301.1	248.0	272.3
Total Stops	6713	6844	6945	6738
Fuel Used (gal)	168.0	171.8	157.8	163.1

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.5	0.3	0.0	0.0	0.0	0.1	0.0	0.0	1.0
Denied Del/Veh (s)	0.2	0.2	5.9	2.6	0.1	0.0	0.1	1.1	0.3	0.3	1.1
Total Delay (hr)	2.6	0.8	3.7	1.4	1.7	1.7	0.6	4.3	4.2	1.4	22.2
Total Del/Veh (s)	46.0	11.9	41.9	13.3	29.6	15.4	5.3	36.1	26.5	21.0	24.0
Stop Delay (hr)	2.4	0.7	3.5	1.3	1.5	1.3	0.2	3.6	3.1	1.0	18.5
Stop Del/Veh (s)	42.6	10.8	38.7	12.5	25.9	12.3	2.1	30.0	19.5	15.1	20.0
Total Stops	163	211	240	302	160	115	81	357	306	135	2070
Stop/Veh	0.82	0.91	0.75	0.82	0.79	0.30	0.21	0.84	0.54	0.55	0.62
Travel Dist (mi)	45.5	52.6	12.2	14.0	39.7	76.1	75.2	189.6	251.3	108.2	864.3
Travel Time (hr)	4.5	3.0	4.8	2.4	3.2	4.3	3.5	11.0	12.6	5.3	54.5
Avg Speed (mph)	10	17	3	7	13	18	22	17	20	21	16
Fuel Used (gal)	2.0	1.7	1.5	0.8	1.8	3.3	2.7	6.4	8.3	3.3	31.7
Fuel Eff. (mpg)	23.3	31.5	8.4	17.8	22.3	23.2	27.7	29.5	30.4	32.5	27.3
HC Emissions (g)	9	14	6	5	17	39	31	53	73	33	280
CO Emissions (g)	279	336	215	146	572	1264	973	1245	1736	715	7482
NOx Emissions (g)	33	44	20	18	55	127	105	157	219	94	872
Vehicles Entered	197	228	319	366	198	381	376	414	551	237	3267
Vehicles Exited	198	228	321	366	200	383	380	417	548	238	3279
Hourly Exit Rate	198	228	321	366	200	383	380	417	548	238	3279
Input Volume	200	230	322	367	210	419	414	416	551	239	3368
% of Volume	99	99	100	100	95	91	92	100	99	100	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.9	0.6	1.6
Denied Del/Veh (s)	3.5	0.5	0.0	0.0	4.8	4.5	2.6
Total Delay (hr)	1.9	1.7	1.3	3.9	10.8	1.0	20.6
Total Del/Veh (s)	75.2	17.6	62.6	22.8	55.7	7.9	32.5
Stop Delay (hr)	1.8	1.5	1.2	3.0	8.2	0.6	16.3
Stop Del/Veh (s)	71.7	15.9	58.1	17.2	42.3	4.5	25.7
Total Stops	87	309	91	340	594	198	1619
Stop/Veh	0.97	0.91	1.23	0.55	0.85	0.43	0.71
Travel Dist (mi)	13.5	51.3	4.8	40.4	139.9	92.7	342.6
Travel Time (hr)	2.5	3.7	1.5	5.4	16.8	5.2	35.1
Avg Speed (mph)	6	14	3	7	9	20	10
Fuel Used (gal)	0.9	1.7	0.5	2.6	7.4	3.5	16.6
Fuel Eff. (mpg)	15.6	29.6	10.1	15.7	18.9	26.2	20.6
HC Emissions (g)	6	16	2	18	52	40	135
CO Emissions (g)	204	478	75	534	1633	1281	4204
NOx Emissions (g)	16	46	8	70	182	132	454
Vehicles Entered	87	335	72	615	681	451	2241
Vehicles Exited	89	336	72	606	680	451	2234
Hourly Exit Rate	89	336	72	606	680	451	2234
Input Volume	86	338	86	691	680	458	2339
% of Volume	103	99	84	88	100	98	96
Denied Entry Before	0	0	0	0	2	1	3
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	74.1	36.9	0.0	0.0	0.0	0.0	111.0
Denied Del/Veh (s)	661.7	660.9	0.0	0.0	0.0	0.0	214.4
Total Delay (hr)	23.5	7.8	1.8	0.2	2.6	3.5	39.4
Total Del/Veh (s)	263.7	179.2	16.6	7.3	29.8	27.4	81.4
Stop Delay (hr)	22.1	7.2	1.5	0.2	2.2	2.8	36.0
Stop Del/Veh (s)	247.6	167.0	14.2	6.5	24.6	21.8	74.3
Total Stops	578	230	106	102	285	216	1517
Stop/Veh	1.80	1.47	0.27	1.00	0.90	0.47	0.87
Travel Dist (mi)	43.7	21.9	9.3	2.3	20.6	29.8	127.5
Travel Time (hr)	99.2	45.5	2.1	0.3	3.5	4.6	155.2
Avg Speed (mph)	2	3	4	7	6	7	3
Fuel Used (gal)	23.8	10.9	0.9	0.1	1.3	2.0	39.0
Fuel Eff. (mpg)	1.8	2.0	10.6	15.8	15.6	15.0	3.3
HC Emissions (g)	51	53	6	1	6	15	133
CO Emissions (g)	1827	1253	170	20	206	427	3903
NOx Emissions (g)	72	67	25	3	27	54	248
Vehicles Entered	293	145	387	102	312	458	1697
Vehicles Exited	300	149	386	102	313	456	1706
Hourly Exit Rate	300	149	386	102	313	456	1706
Input Volume	367	184	409	112	311	455	1838
% of Volume	82	81	94	91	101	100	93
Denied Entry Before	38	19	0	0	0	0	57
Denied Entry After	110	56	0	0	0	0	166

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	15.4	5.3	0.0	2.8	0.5	0.0	23.9
Total Del/Veh (s)	2763.0	1898.3	21.1	20.9	2.9	1.6	76.4
Stop Delay (hr)	15.4	5.3	0.0	2.6	0.2	0.0	23.5
Stop Del/Veh (s)	2764.9	1898.4	19.7	19.1	1.4	1.2	74.9
Total Stops	3	6	2	138	60	2	211
Stop/Veh	0.15	0.60	0.67	0.28	0.10	0.08	0.19
Travel Dist (mi)	0.4	0.4	0.1	9.4	13.2	0.6	24.1
Travel Time (hr)	15.4	5.3	0.0	3.2	1.0	0.1	25.0
Avg Speed (mph)	0	0	3	3	13	11	1
Fuel Used (gal)	3.5	1.2	0.0	1.2	0.9	0.0	6.9
Fuel Eff. (mpg)	0.1	0.3	9.1	7.7	15.4	22.7	3.5
HC Emissions (g)	0	0	0	8	9	0	18
CO Emissions (g)	168	60	1	204	266	8	707
NOx Emissions (g)	0	0	0	30	39	1	71
Vehicles Entered	7	6	3	486	580	25	1107
Vehicles Exited	4	5	3	484	580	26	1102
Hourly Exit Rate	4	5	3	484	580	26	1102
Input Volume	22	19	4	499	612	27	1183
% of Volume	18	26	75	97	95	96	93
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	1.3	0.0	0.0	0.0	1.3
Denied Del/Veh (s)	0.0	0.0	11.3	13.8	0.0	0.0	4.3
Total Delay (hr)	0.1	4.3	21.5	0.6	0.1	0.2	26.8
Total Del/Veh (s)	44.5	151.4	180.9	171.3	5.1	1.5	85.0
Stop Delay (hr)	0.1	4.3	20.6	0.6	0.1	0.1	25.8
Stop Del/Veh (s)	41.6	152.6	173.9	166.6	3.7	0.4	81.8
Total Stops	7	81	425	11	32	20	576
Stop/Veh	1.17	0.79	1.00	0.85	0.39	0.04	0.51
Travel Dist (mi)	0.5	8.5	76.1	2.2	1.8	11.4	100.5
Travel Time (hr)	0.1	4.6	25.3	0.7	0.2	0.6	31.6
Avg Speed (mph)	5	2	3	3	9	19	3
Fuel Used (gal)	0.0	1.1	7.3	0.2	0.1	0.8	9.5
Fuel Eff. (mpg)	17.8	7.5	10.4	10.3	21.1	15.0	10.6
HC Emissions (g)	0	4	27	0	1	10	42
CO Emissions (g)	3	117	947	19	19	371	1476
NOx Emissions (g)	0	8	65	1	3	40	117
Vehicles Entered	6	99	405	12	82	504	1108
Vehicles Exited	6	94	394	11	82	506	1093
Hourly Exit Rate	6	94	394	11	82	506	1093
Input Volume	9	97	406	11	89	543	1155
% of Volume	67	97	97	100	92	93	95
Denied Entry Before	0	0	1	0	0	0	1
Denied Entry After	0	0	1	0	0	0	1

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	2.6	0.4	0.4	1.6	0.5	0.5	0.3	0.2	0.3	0.2	0.2	0.1
Total Delay (hr)	0.0	0.9	0.1	0.4	0.9	0.0	0.2	0.3	0.3	0.2	0.2	0.0
Total Del/Veh (s)	12.7	7.6	4.9	15.2	7.6	7.6	14.0	13.8	9.5	15.1	13.6	8.4
Stop Delay (hr)	0.0	0.5	0.0	0.3	0.5	0.0	0.2	0.2	0.3	0.1	0.2	0.0
Stop Del/Veh (s)	10.1	4.2	3.0	12.0	4.1	4.7	11.4	10.9	8.1	13.1	11.2	7.6
Total Stops	5	189	18	73	169	3	39	51	89	29	40	13
Stop/Veh	0.71	0.43	0.45	0.80	0.42	0.60	0.76	0.70	0.78	0.78	0.73	0.81
Travel Dist (mi)	1.6	93.3	8.4	25.0	111.4	1.4	2.9	4.1	6.4	2.4	3.7	1.1
Travel Time (hr)	0.1	4.7	0.4	1.5	5.4	0.1	0.3	0.5	0.6	0.3	0.4	0.1
Avg Speed (mph)	17	20	20	18	21	20	9	9	10	9	10	12
Fuel Used (gal)	0.1	2.9	0.3	0.8	3.5	0.0	0.1	0.2	0.3	0.1	0.2	0.0
Fuel Eff. (mpg)	30.3	32.0	33.4	30.9	32.1	31.4	20.6	20.2	23.3	22.9	22.6	25.8
HC Emissions (g)	0	22	3	4	25	0	1	1	2	0	2	0
CO Emissions (g)	5	536	57	126	596	4	28	51	75	21	47	8
NOx Emissions (g)	1	75	8	17	86	0	3	5	8	2	5	1
Vehicles Entered	7	432	39	89	396	5	51	72	113	36	55	16
Vehicles Exited	7	432	39	90	398	5	51	72	113	36	55	16
Hourly Exit Rate	7	432	39	90	398	5	51	72	113	36	55	16
Input Volume	9	439	37	89	384	5	50	74	110	39	54	16
% of Volume	78	98	105	101	104	100	102	97	103	92	102	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.5
Total Delay (hr)	3.4
Total Del/Veh (s)	9.3
Stop Delay (hr)	2.3
Stop Del/Veh (s)	6.3
Total Stops	718
Stop/Veh	0.54
Travel Dist (mi)	261.5
Travel Time (hr)	14.3
Avg Speed (mph)	19
Fuel Used (gal)	8.5
Fuel Eff. (mpg)	30.9
HC Emissions (g)	61
CO Emissions (g)	1554
NOx Emissions (g)	212
Vehicles Entered	1311
Vehicles Exited	1314
Hourly Exit Rate	1314
Input Volume	1306
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.6	0.6
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.2	0.2
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	40.9	40.9
Travel Time (hr)	2.2	2.2
Avg Speed (mph)	18	18
Fuel Used (gal)	3.4	3.4
Fuel Eff. (mpg)	12.2	12.2
HC Emissions (g)	46	46
CO Emissions (g)	2087	2087
NOx Emissions (g)	169	169
Vehicles Entered	798	798
Vehicles Exited	800	800
Hourly Exit Rate	800	800
Input Volume	830	830
% of Volume	96	96
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.3	0.3
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	13.9	13.9
Travel Time (hr)	0.5	0.5
Avg Speed (mph)	29	29
Fuel Used (gal)	0.4	0.4
Fuel Eff. (mpg)	33.5	33.5
HC Emissions (g)	4	4
CO Emissions (g)	98	98
NOx Emissions (g)	12	12
Vehicles Entered	183	183
Vehicles Exited	183	183
Hourly Exit Rate	183	183
Input Volume	180	180
% of Volume	102	102
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	121.6
Denied Del/Veh (s)	83.1
Total Delay (hr)	150.8
Total Del/Veh (s)	101.4
Stop Delay (hr)	134.5
Stop Del/Veh (s)	90.5
Total Stops	6738
Stop/Veh	1.26
Travel Dist (mi)	2955.3
Travel Time (hr)	381.0
Avg Speed (mph)	11
Fuel Used (gal)	163.1
Fuel Eff. (mpg)	18.1
HC Emissions (g)	1217
CO Emissions (g)	35612
NOx Emissions (g)	3721
Vehicles Entered	5081
Vehicles Exited	5098
Hourly Exit Rate	5098
Input Volume	17225
% of Volume	30
Denied Entry Before	61
Denied Entry After	185

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	180.9	213.3	0.2	3
Commerce St.	7	11.4	13.8	0.0	5
Total		192.3	227.1	0.2	4

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.5	4.3	0.0	17
Total		1.5	4.3	0.0	17

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	L	T
Maximum Queue (ft)	288	141	221	219	213	192	190	142	144	205	201	334
Average Queue (ft)	139	72	180	47	114	96	54	58	53	99	113	167
95th Queue (ft)	240	117	243	191	196	178	128	110	109	176	176	285
Link Distance (ft)	1218	1218				1007	1007					2409
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	400	400	
Storage Blk Time (%)			10	2		10	1	2	1			0
Queuing Penalty (veh)			0	6		22	1	8	2			0

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	SB
Directions Served	TR
Maximum Queue (ft)	367
Average Queue (ft)	196
95th Queue (ft)	323
Link Distance (ft)	2409
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	201	270	174	310	875	668
Average Queue (ft)	85	116	91	294	456	147
95th Queue (ft)	164	216	189	313	906	540
Link Distance (ft)	808		278	1007	1007	
Upstream Blk Time (%)			15	1	0	
Queuing Penalty (veh)			120	6	2	
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	2	9	32		
Queuing Penalty (veh)	0	2	59	27		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	828	91	58	200	302
Average Queue (ft)	249	796	72	45	141	175
95th Queue (ft)	251	813	84	63	233	313
Link Distance (ft)		776	58			278
Upstream Blk Time (%)		86	57	4		4
Queuing Penalty (veh)		0	295	0		29
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	83	4	59	6	19	31
Queuing Penalty (veh)	152	13	66	24	86	97

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	199	452	359	121	91
Average Queue (ft)	188	439	270	95	43
95th Queue (ft)	197	483	459	111	102
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		95	58	63	7
Queuing Penalty (veh)		0	0	317	46
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	100	0			
Queuing Penalty (veh)	19	0			

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	104	278	958	75
Average Queue (ft)	12	145	656	36
95th Queue (ft)	71	319	1133	79
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)		0	17	6
Queuing Penalty (veh)		0	0	39
Storage Bay Dist (ft)	75			
Storage Blk Time (%)		55		
Queuing Penalty (veh)		5		

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	42	187	103	178	169	102
Average Queue (ft)	5	95	41	88	74	45
95th Queue (ft)	28	158	80	154	130	82
Link Distance (ft)		1140		1479		352
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		100			
Storage Blk Time (%)	0	16	0	3		
Queuing Penalty (veh)	0	1	1	3		

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1449

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3160	3148	3145	3098	3020	3082	3067
Vehs Exited	3144	3115	3135	3090	2985	3047	3058
Starting Vehs	155	154	161	147	132	125	152
Ending Vehs	171	187	171	155	167	160	161
Denied Entry Before	80	83	42	53	5	1	27
Denied Entry After	146	157	112	114	81	20	100
Travel Distance (mi)	1946	1926	1921	1911	1834	1870	1870
Travel Time (hr)	281.3	271.2	253.8	243.9	188.7	132.5	213.1
Total Delay (hr)	210.8	201.3	184.2	174.8	122.2	64.5	145.5
Total Stops	3431	3567	3381	3468	3241	3632	3260
Fuel Used (gal)	112.6	110.1	106.1	103.0	88.5	76.5	95.0

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3116	3204	3077	3111
Vehs Exited	3072	3172	3079	3089
Starting Vehs	154	134	128	141
Ending Vehs	198	166	126	164
Denied Entry Before	15	0	0	30
Denied Entry After	122	51	1	89
Travel Distance (mi)	1900	1953	1885	1902
Travel Time (hr)	226.5	164.2	121.0	209.6
Total Delay (hr)	157.8	93.4	52.9	140.7
Total Stops	3406	3746	3471	3458
Fuel Used (gal)	99.2	86.3	74.5	95.2

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3160	3148	3145	3098	3020	3082	3067
Vehs Exited	3144	3115	3135	3090	2985	3047	3058
Starting Vehs	155	154	161	147	132	125	152
Ending Vehs	171	187	171	155	167	160	161
Denied Entry Before	80	83	42	53	5	1	27
Denied Entry After	146	157	112	114	81	20	100
Travel Distance (mi)	1946	1926	1921	1911	1834	1870	1870
Travel Time (hr)	281.3	271.2	253.8	243.9	188.7	132.5	213.1
Total Delay (hr)	210.8	201.3	184.2	174.8	122.2	64.5	145.5
Total Stops	3431	3567	3381	3468	3241	3632	3260
Fuel Used (gal)	112.6	110.1	106.1	103.0	88.5	76.5	95.0

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3116	3204	3077	3111
Vehs Exited	3072	3172	3079	3089
Starting Vehs	154	134	128	141
Ending Vehs	198	166	126	164
Denied Entry Before	15	0	0	30
Denied Entry After	122	51	1	89
Travel Distance (mi)	1900	1953	1885	1902
Travel Time (hr)	226.5	164.2	121.0	209.6
Total Delay (hr)	157.8	93.4	52.9	140.7
Total Stops	3406	3746	3471	3458
Fuel Used (gal)	99.2	86.3	74.5	95.2

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.1	4.1	0.1	0.0	0.0	0.0	1.3	0.1	0.1	0.2
Total Delay (hr)	1.0	0.2	0.6	0.0	0.3	0.8	0.2	0.1	0.7	0.1	3.9
Total Del/Veh (s)	48.6	6.0	50.1	6.5	8.0	4.2	3.2	9.2	6.0	3.6	7.9
Stop Delay (hr)	1.0	0.2	0.6	0.0	0.2	0.4	0.0	0.0	0.4	0.0	2.8
Stop Del/Veh (s)	46.2	5.3	48.0	6.3	5.1	2.3	0.3	6.3	3.6	2.0	5.8
Total Stops	65	101	38	20	66	108	0	18	99	20	535
Stop/Veh	0.88	0.95	0.90	0.95	0.58	0.15	0.00	0.69	0.23	0.26	0.30
Travel Dist (mi)	16.8	24.5	1.7	0.9	23.1	138.7	36.9	11.1	186.0	32.9	472.4
Travel Time (hr)	1.7	1.2	0.7	0.1	1.1	5.7	1.6	0.5	7.0	1.2	20.9
Avg Speed (mph)	10	20	3	10	21	24	24	25	27	27	23
Fuel Used (gal)	0.7	0.7	0.2	0.0	0.9	5.4	1.3	0.3	5.5	0.9	16.0
Fuel Eff. (mpg)	23.0	33.3	8.5	39.0	26.3	25.5	28.2	35.3	34.0	36.3	29.5
HC Emissions (g)	3	6	1	0	7	63	14	4	55	8	160
CO Emissions (g)	100	136	37	3	271	1978	454	72	1122	166	4338
NOx Emissions (g)	11	19	2	0	26	209	49	11	158	23	508
Vehicles Entered	72	105	41	21	114	693	188	26	427	76	1763
Vehicles Exited	72	105	41	21	113	693	188	25	426	76	1760
Hourly Exit Rate	72	105	41	21	113	693	188	25	426	76	1760
Input Volume	74	102	42	21	117	722	200	26	430	68	1802
% of Volume	97	103	98	100	97	96	94	96	99	112	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.3	0.6	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	1.1	1.5	0.8	2.6	1.6	0.2	8.0
Total Del/Veh (s)	53.3	13.8	21.4	15.5	16.0	4.1	15.9
Stop Delay (hr)	1.0	1.3	0.6	1.8	1.2	0.1	6.2
Stop Del/Veh (s)	50.1	11.9	16.8	10.6	12.3	2.4	12.4
Total Stops	69	354	134	290	145	97	1089
Stop/Veh	0.92	0.88	0.97	0.48	0.40	0.45	0.60
Travel Dist (mi)	11.3	61.2	9.1	39.4	68.8	44.1	233.9
Travel Time (hr)	1.6	4.0	1.2	4.1	4.0	1.9	16.8
Avg Speed (mph)	7	16	8	10	17	23	14
Fuel Used (gal)	0.6	1.9	0.5	2.3	2.6	1.4	9.4
Fuel Eff. (mpg)	18.7	31.7	17.4	17.5	26.0	30.8	24.9
HC Emissions (g)	6	16	3	17	27	15	84
CO Emissions (g)	176	500	109	542	731	438	2496
NOx Emissions (g)	15	47	14	69	87	47	278
Vehicles Entered	74	399	137	596	359	214	1779
Vehicles Exited	73	398	137	599	358	213	1778
Hourly Exit Rate	73	398	137	599	358	213	1778
Input Volume	75	400	144	640	350	224	1833
% of Volume	97	100	95	94	102	95	97
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.3	0.0	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	3.6	0.8	0.0	0.0	0.0	0.0	0.8
Total Delay (hr)	5.8	0.4	1.7	0.2	1.0	0.9	10.0
Total Del/Veh (s)	73.1	13.1	13.4	4.8	23.8	15.0	26.4
Stop Delay (hr)	5.3	0.3	1.4	0.1	0.9	0.8	8.8
Stop Del/Veh (s)	66.8	10.5	11.1	3.9	20.6	12.2	23.2
Total Stops	311	111	110	135	120	65	852
Stop/Veh	1.10	1.00	0.24	0.99	0.76	0.29	0.62
Travel Dist (mi)	41.3	16.3	10.9	3.0	10.2	14.2	95.9
Travel Time (hr)	7.6	1.1	2.1	0.4	1.5	1.4	13.9
Avg Speed (mph)	6	16	5	8	7	10	7
Fuel Used (gal)	2.6	0.6	1.0	0.2	0.6	0.8	5.9
Fuel Eff. (mpg)	15.6	28.9	10.9	17.4	16.1	17.0	16.4
HC Emissions (g)	15	5	7	1	3	9	41
CO Emissions (g)	522	174	230	36	129	275	1365
NOx Emissions (g)	43	17	33	6	16	32	146
Vehicles Entered	280	110	453	135	155	220	1353
Vehicles Exited	279	109	453	135	156	219	1351
Hourly Exit Rate	279	109	453	135	156	219	1351
Input Volume	269	106	514	147	154	216	1406
% of Volume	104	103	88	92	101	101	96
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	14.9	1.8	0.0	2.6	0.1	0.0	19.5
Total Del/Veh (s)	1917.5	1084.3	17.0	16.3	1.6	0.7	74.3
Stop Delay (hr)	14.9	1.8	0.0	2.3	0.1	0.0	19.1
Stop Del/Veh (s)	1919.5	1083.6	15.6	14.3	0.8	0.5	72.9
Total Stops	13	7	2	164	14	0	200
Stop/Veh	0.46	1.17	0.67	0.28	0.05	0.00	0.21
Travel Dist (mi)	1.1	0.3	0.1	11.3	6.7	0.6	20.1
Travel Time (hr)	15.0	1.8	0.0	3.1	0.5	0.1	20.4
Avg Speed (mph)	0	0	4	4	15	13	1
Fuel Used (gal)	3.4	0.4	0.0	1.3	0.4	0.0	5.6
Fuel Eff. (mpg)	0.3	0.8	9.8	8.9	15.3	25.0	3.6
HC Emissions (g)	0	0	0	9	5	0	14
CO Emissions (g)	166	22	1	219	163	8	579
NOx Emissions (g)	1	0	0	35	21	1	58
Vehicles Entered	18	6	3	577	298	28	930
Vehicles Exited	11	4	3	578	298	28	922
Hourly Exit Rate	11	4	3	578	298	28	922
Input Volume	24	7	4	637	295	27	994
% of Volume	46	57	75	91	101	104	93
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	56.3	1.3	0.0	0.0	57.6
Denied Del/Veh (s)	0.0	0.0	347.7	335.3	0.0	0.0	208.4
Total Delay (hr)	0.1	2.4	31.9	0.8	0.1	0.1	35.3
Total Del/Veh (s)	27.7	96.3	215.8	199.7	5.4	0.8	133.9
Stop Delay (hr)	0.1	2.4	31.1	0.8	0.0	0.0	34.4
Stop Del/Veh (s)	24.7	96.8	210.1	196.7	4.0	0.3	130.5
Total Stops	16	63	302	6	16	8	411
Stop/Veh	1.23	0.70	0.57	0.43	0.44	0.03	0.43
Travel Dist (mi)	1.1	7.5	93.7	2.4	0.8	5.9	111.5
Travel Time (hr)	0.1	2.7	91.4	2.2	0.1	0.3	96.8
Avg Speed (mph)	8	3	3	3	9	22	3
Fuel Used (gal)	0.0	0.7	22.6	0.5	0.0	0.4	24.3
Fuel Eff. (mpg)	24.0	10.8	4.1	4.4	22.2	15.9	4.6
HC Emissions (g)	0	2	65	0	0	5	73
CO Emissions (g)	6	62	2073	31	7	223	2402
NOx Emissions (g)	1	5	93	1	1	19	119
Vehicles Entered	13	85	497	12	36	264	907
Vehicles Exited	13	87	494	13	36	264	907
Hourly Exit Rate	13	87	494	13	36	264	907
Input Volume	13	85	556	12	40	261	967
% of Volume	100	102	89	108	90	101	94
Denied Entry Before	0	0	30	0	0	0	30
Denied Entry After	0	0	86	2	0	0	88

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.3	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.5	0.0	0.0	0.5	0.0	0.1	0.2	0.1	0.1	0.0	0.0
Total Del/Veh (s)	6.9	5.6	3.6	8.5	5.8	4.5	14.0	13.5	6.0	15.0	14.1	4.7
Stop Delay (hr)	0.0	0.3	0.0	0.0	0.3	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Stop Del/Veh (s)	4.5	3.5	2.6	5.7	3.3	2.2	11.9	10.9	5.1	13.3	12.2	4.4
Total Stops	1	102	4	6	112	0	21	32	47	16	9	6
Stop/Veh	0.50	0.34	0.40	0.60	0.33	0.00	0.70	0.70	0.70	0.76	0.75	0.67
Travel Dist (mi)	0.4	64.8	2.1	2.8	93.6	0.4	1.7	2.6	3.8	1.4	0.8	0.6
Travel Time (hr)	0.0	3.1	0.1	0.1	4.3	0.0	0.2	0.3	0.3	0.2	0.1	0.0
Avg Speed (mph)	20	21	21	20	22	23	9	9	13	10	10	15
Fuel Used (gal)	0.0	2.0	0.1	0.1	2.9	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Fuel Eff. (mpg)	31.7	32.1	33.2	33.3	32.6	34.2	21.6	21.5	27.7	25.2	24.4	34.6
HC Emissions (g)	0	15	0	0	25	0	1	1	1	0	0	0
CO Emissions (g)	1	369	7	8	548	1	22	37	40	8	6	3
NOx Emissions (g)	0	51	1	1	80	0	2	4	4	1	1	0
Vehicles Entered	2	300	10	10	333	1	30	46	67	21	12	9
Vehicles Exited	2	300	10	10	334	1	29	46	67	21	12	9
Hourly Exit Rate	2	300	10	10	334	1	29	46	67	21	12	9
Input Volume	2	295	9	10	341	1	30	47	69	20	14	9
% of Volume	100	102	111	100	98	100	97	98	97	105	86	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	1.6
Total Del/Veh (s)	6.8
Stop Delay (hr)	1.1
Stop Del/Veh (s)	4.6
Total Stops	356
Stop/Veh	0.42
Travel Dist (mi)	175.1
Travel Time (hr)	8.8
Avg Speed (mph)	20
Fuel Used (gal)	5.5
Fuel Eff. (mpg)	31.8
HC Emissions (g)	44
CO Emissions (g)	1049
NOx Emissions (g)	146
Vehicles Entered	841
Vehicles Exited	841
Hourly Exit Rate	841
Input Volume	847
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	2.4	2.4
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	10.7	10.7
Travel Time (hr)	0.7	0.7
Avg Speed (mph)	15	15
Fuel Used (gal)	0.9	0.9
Fuel Eff. (mpg)	12.0	12.0
HC Emissions (g)	12	12
CO Emissions (g)	553	553
NOx Emissions (g)	43	43
Vehicles Entered	213	213
Vehicles Exited	213	213
Hourly Exit Rate	213	213
Input Volume	226	226
% of Volume	94	94
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.0	0.0
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	2.4	2.4
Travel Time (hr)	0.1	0.1
Avg Speed (mph)	29	29
Fuel Used (gal)	0.1	0.1
Fuel Eff. (mpg)	35.7	35.7
HC Emissions (g)	0	0
CO Emissions (g)	5	5
NOx Emissions (g)	1	1
Vehicles Entered	32	32
Vehicles Exited	32	32
Hourly Exit Rate	32	32
Input Volume	33	33
% of Volume	97	97
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	58.4
Denied Del/Veh (s)	65.6
Total Delay (hr)	82.4
Total Del/Veh (s)	91.2
Stop Delay (hr)	75.1
Stop Del/Veh (s)	83.1
Total Stops	3458
Stop/Veh	1.06
Travel Dist (mi)	1901.5
Travel Time (hr)	209.6
Avg Speed (mph)	13
Fuel Used (gal)	95.2
Fuel Eff. (mpg)	20.0
HC Emissions (g)	715
CO Emissions (g)	20634
NOx Emissions (g)	2187
Vehicles Entered	3111
Vehicles Exited	3089
Hourly Exit Rate	3089
Input Volume	11232
% of Volume	28
Denied Entry Before	30
Denied Entry After	89

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	215.8	617.3	0.2	3
Commerce St.	7	9.4	11.9	0.0	6
Total		225.2	629.2	0.2	3

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	0.8	3.6	0.0	20
Total		0.8	3.6	0.0	20

Queuing and Blocking Report

2024 Background AM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	L	T	TR
Maximum Queue (ft)	123	78	91	46	84	92	112	54	123	140
Average Queue (ft)	57	41	38	15	34	32	51	15	45	48
95th Queue (ft)	107	65	80	42	67	75	96	43	101	108
Link Distance (ft)	1223	1223			1020	1020		2298	2298	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			200		100			100		
Storage Blk Time (%)					0	0	0		1	
Queuing Penalty (veh)					0	0	1		0	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	160	245	174	304	254	94
Average Queue (ft)	60	106	98	231	132	44
95th Queue (ft)	121	186	199	337	226	76
Link Distance (ft)		810		278	1020	1020
Upstream Blk Time (%)				4		
Queuing Penalty (veh)				29		
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)		1	3	24		
Queuing Penalty (veh)		1	19	34		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	498	91	58	154	143
Average Queue (ft)	195	157	73	46	63	58
95th Queue (ft)	285	421	85	61	128	119
Link Distance (ft)		776	58		278	
Upstream Blk Time (%)			50	3		
Queuing Penalty (veh)			333	0		
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	38	0	52	5	4	3
Queuing Penalty (veh)	40	0	77	25	8	5

Queuing and Blocking Report

2024 Background AM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	200	449	208	117	76
Average Queue (ft)	186	343	65	93	13
95th Queue (ft)	218	600	225	109	55
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		58	4	56	2
Queuing Penalty (veh)		0	0	362	5
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	99				
Queuing Penalty (veh)	7				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	117	254	1006	64
Average Queue (ft)	21	95	903	19
95th Queue (ft)	92	230	1316	59
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)		0	73	2
Queuing Penalty (veh)		0	0	7
Storage Bay Dist (ft)	75			
Storage Blk Time (%)	37			
Queuing Penalty (veh)	5			

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	160	148	106	55
Average Queue (ft)	62	67	49	23
95th Queue (ft)	124	120	85	51
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 958

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4101	4219	4198	4170	4217	4071	4293
Vehs Exited	4114	4224	4182	4174	4192	4128	4266
Starting Vehs	153	149	140	139	133	180	146
Ending Vehs	140	144	156	135	158	123	173
Denied Entry Before	1	0	1	1	0	0	0
Denied Entry After	2	0	0	1	0	1	1
Travel Distance (mi)	2518	2593	2567	2569	2608	2520	2637
Travel Time (hr)	136.1	143.1	138.9	141.9	147.7	139.6	146.2
Total Delay (hr)	44.3	48.8	45.2	48.5	52.7	47.7	50.1
Total Stops	4645	5006	4695	4578	5146	4673	5008
Fuel Used (gal)	94.2	97.9	95.7	96.4	99.3	95.0	99.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4310	4259	4133	4196
Vehs Exited	4285	4211	4138	4192
Starting Vehs	177	130	155	143
Ending Vehs	202	178	150	152
Denied Entry Before	2	0	0	0
Denied Entry After	0	2	1	0
Travel Distance (mi)	2650	2624	2545	2583
Travel Time (hr)	169.4	158.9	149.0	147.1
Total Delay (hr)	73.1	63.5	56.3	53.0
Total Stops	5410	5182	4863	4922
Fuel Used (gal)	105.2	102.0	97.9	98.3

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	4101	4219	4198	4170	4217	4071	4293
Vehs Exited	4114	4224	4182	4174	4192	4128	4266
Starting Vehs	153	149	140	139	133	180	146
Ending Vehs	140	144	156	135	158	123	173
Denied Entry Before	1	0	1	1	0	0	0
Denied Entry After	2	0	0	1	0	1	1
Travel Distance (mi)	2518	2593	2567	2569	2608	2520	2637
Travel Time (hr)	136.1	143.1	138.9	141.9	147.7	139.6	146.2
Total Delay (hr)	44.3	48.8	45.2	48.5	52.7	47.7	50.1
Total Stops	4645	5006	4695	4578	5146	4673	5008
Fuel Used (gal)	94.2	97.9	95.7	96.4	99.3	95.0	99.5

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	4310	4259	4133	4196
Vehs Exited	4285	4211	4138	4192
Starting Vehs	177	130	155	143
Ending Vehs	202	178	150	152
Denied Entry Before	2	0	0	0
Denied Entry After	0	2	1	0
Travel Distance (mi)	2650	2624	2545	2583
Travel Time (hr)	169.4	158.9	149.0	147.1
Total Delay (hr)	73.1	63.5	56.3	53.0
Total Stops	5410	5182	4863	4922
Fuel Used (gal)	105.2	102.0	97.9	98.3

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	4.0	0.1	0.1	0.0	0.0	0.9	0.2	0.2	0.2
Total Delay (hr)	6.0	0.6	0.3	0.1	1.0	1.3	0.1	0.1	3.0	0.9	13.5
Total Del/Veh (s)	96.0	9.1	45.1	6.6	15.4	9.7	3.6	11.1	15.3	12.0	20.0
Stop Delay (hr)	5.8	0.5	0.3	0.1	0.7	0.9	0.0	0.1	1.9	0.5	10.8
Stop Del/Veh (s)	91.9	7.8	43.1	6.2	11.4	6.5	0.3	6.3	9.7	7.2	16.0
Total Stops	248	215	23	53	174	190	0	30	304	120	1357
Stop/Veh	1.10	0.86	0.96	0.96	0.77	0.38	0.00	0.62	0.44	0.45	0.56
Travel Dist (mi)	51.1	57.0	1.0	2.2	45.2	100.1	26.4	20.4	295.1	112.4	710.9
Travel Time (hr)	8.2	3.1	0.4	0.2	2.7	4.9	1.1	0.9	12.9	4.9	39.1
Avg Speed (mph)	6	19	3	10	17	21	24	24	23	23	18
Fuel Used (gal)	2.9	1.8	0.1	0.1	1.8	4.0	0.9	0.6	9.1	3.3	24.6
Fuel Eff. (mpg)	17.5	32.2	9.3	35.0	24.9	25.1	28.1	34.6	32.3	34.0	28.9
HC Emissions (g)	12	13	0	0	15	47	12	4	89	35	228
CO Emissions (g)	383	335	19	12	558	1466	362	95	1950	737	5915
NOx Emissions (g)	40	44	1	1	55	155	39	12	259	100	706
Vehicles Entered	221	246	24	54	224	498	137	47	684	262	2397
Vehicles Exited	217	246	24	54	224	498	136	48	687	261	2395
Hourly Exit Rate	217	246	24	54	224	498	136	48	687	261	2395
Input Volume	212	244	23	61	223	505	139	49	687	254	2397
% of Volume	102	101	104	89	100	99	98	98	100	103	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.5	0.5	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	1.4	0.9	1.0	2.3	5.1	0.7	11.4
Total Del/Veh (s)	53.1	10.9	37.3	14.7	29.4	6.5	19.9
Stop Delay (hr)	1.3	0.8	0.9	1.5	3.6	0.4	8.4
Stop Del/Veh (s)	50.2	9.3	33.0	9.4	20.7	3.5	14.7
Total Stops	90	260	102	288	346	155	1241
Stop/Veh	0.94	0.88	1.10	0.51	0.55	0.41	0.60
Travel Dist (mi)	14.4	45.2	6.1	36.5	124.7	76.4	303.3
Travel Time (hr)	2.0	2.7	1.2	3.6	9.5	3.6	22.7
Avg Speed (mph)	7	17	5	10	13	21	13
Fuel Used (gal)	0.8	1.4	0.4	2.1	5.4	2.7	12.8
Fuel Eff. (mpg)	18.4	32.4	13.6	17.8	23.3	27.9	23.7
HC Emissions (g)	6	13	3	16	47	31	116
CO Emissions (g)	191	390	96	494	1343	978	3492
NOx Emissions (g)	16	39	11	64	165	104	398
Vehicles Entered	94	294	92	554	613	376	2023
Vehicles Exited	94	294	92	552	614	375	2021
Hourly Exit Rate	94	294	92	552	614	375	2021
Input Volume	91	299	91	554	610	374	2019
% of Volume	103	98	101	100	101	100	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.3	0.0	0.0	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	3.5	0.8	0.0	0.0	0.0	0.0	0.7
Total Delay (hr)	4.4	0.8	1.5	0.2	2.0	2.5	11.4
Total Del/Veh (s)	58.3	15.7	14.3	6.6	24.4	21.2	24.5
Stop Delay (hr)	4.0	0.7	1.3	0.2	1.6	2.0	9.7
Stop Del/Veh (s)	52.8	13.5	12.0	5.8	19.6	16.5	20.7
Total Stops	288	178	122	120	225	180	1113
Stop/Veh	1.06	0.92	0.32	1.00	0.78	0.42	0.66
Travel Dist (mi)	39.7	28.7	9.0	2.7	18.8	27.4	126.4
Travel Time (hr)	6.1	2.0	1.8	0.4	2.7	3.5	16.5
Avg Speed (mph)	7	14	5	7	7	8	8
Fuel Used (gal)	2.3	1.0	0.8	0.2	1.1	1.7	7.1
Fuel Eff. (mpg)	17.5	29.2	11.0	16.3	16.7	16.1	17.9
HC Emissions (g)	14	9	7	1	7	14	52
CO Emissions (g)	495	274	196	34	209	413	1621
NOx Emissions (g)	42	27	27	5	27	53	181
Vehicles Entered	269	193	379	120	286	423	1670
Vehicles Exited	268	193	379	120	286	423	1669
Hourly Exit Rate	268	193	379	120	286	423	1669
Input Volume	270	196	375	119	275	427	1662
% of Volume	99	98	101	101	104	99	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	2.3	0.2	0.0	1.7	0.3	0.0	4.6
Total Del/Veh (s)	435.6	40.7	22.8	12.5	2.1	0.8	14.4
Stop Delay (hr)	2.3	0.2	0.0	1.5	0.2	0.0	4.2
Stop Del/Veh (s)	434.8	40.4	22.2	10.8	1.0	0.6	13.1
Total Stops	16	20	2	163	43	1	245
Stop/Veh	0.84	1.00	0.67	0.34	0.07	0.04	0.21
Travel Dist (mi)	1.3	1.6	0.1	9.4	13.4	0.5	26.3
Travel Time (hr)	2.3	0.3	0.0	2.1	1.0	0.0	5.7
Avg Speed (mph)	1	5	3	5	14	13	5
Fuel Used (gal)	0.6	0.1	0.0	0.9	0.9	0.0	2.5
Fuel Eff. (mpg)	2.3	19.3	8.8	10.7	14.6	23.7	10.7
HC Emissions (g)	0	0	0	7	10	0	18
CO Emissions (g)	30	5	1	174	313	3	526
NOx Emissions (g)	1	0	0	26	44	1	72
Vehicles Entered	16	20	3	483	591	24	1137
Vehicles Exited	16	20	3	482	591	24	1136
Hourly Exit Rate	16	20	3	482	591	24	1136
Input Volume	17	20	4	476	600	23	1140
% of Volume	94	100	75	101	98	104	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.4	0.4	0.0	0.0	0.1
Total Delay (hr)	0.1	0.5	4.9	0.1	0.1	0.2	5.8
Total Del/Veh (s)	18.5	20.2	42.1	37.8	4.3	1.0	18.3
Stop Delay (hr)	0.0	0.4	4.3	0.1	0.1	0.0	5.0
Stop Del/Veh (s)	16.5	19.5	36.7	34.3	2.9	0.3	15.8
Total Stops	10	34	292	7	31	18	392
Stop/Veh	1.00	0.42	0.70	0.64	0.41	0.03	0.35
Travel Dist (mi)	0.9	7.1	77.2	2.1	1.7	12.0	100.8
Travel Time (hr)	0.1	0.7	7.5	0.2	0.2	0.6	9.3
Avg Speed (mph)	10	9	10	11	10	21	11
Fuel Used (gal)	0.0	0.2	3.2	0.1	0.1	0.8	4.4
Fuel Eff. (mpg)	29.8	29.3	24.1	25.9	22.1	15.1	22.8
HC Emissions (g)	0	2	25	0	1	10	38
CO Emissions (g)	3	33	687	11	16	408	1158
NOx Emissions (g)	0	4	70	1	2	39	116
Vehicles Entered	10	81	405	11	75	534	1116
Vehicles Exited	10	79	408	11	75	535	1118
Hourly Exit Rate	10	79	408	11	75	535	1118
Input Volume	10	79	401	12	72	547	1121
% of Volume	100	100	102	92	104	98	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.6	0.5	0.5	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1
Total Delay (hr)	0.0	1.0	0.1	0.0	0.9	0.0	0.2	0.3	0.1	0.2	0.2	0.0
Total Del/Veh (s)	9.6	7.6	5.2	15.1	7.5	6.4	16.0	16.4	9.8	15.7	16.4	6.7
Stop Delay (hr)	0.0	0.6	0.0	0.0	0.5	0.0	0.2	0.2	0.1	0.1	0.1	0.0
Stop Del/Veh (s)	5.8	4.1	3.0	11.9	4.3	4.0	13.7	13.6	8.7	13.6	14.1	6.0
Total Stops	7	190	17	6	167	3	39	40	26	29	24	16
Stop/Veh	0.64	0.39	0.39	0.86	0.39	0.50	0.72	0.73	0.72	0.76	0.71	0.73
Travel Dist (mi)	2.3	105.1	9.4	2.0	119.5	1.6	3.1	3.2	2.0	2.6	2.3	1.5
Travel Time (hr)	0.1	5.4	0.5	0.1	5.8	0.1	0.4	0.4	0.2	0.3	0.2	0.1
Avg Speed (mph)	18	20	20	18	21	20	8	8	10	9	9	13
Fuel Used (gal)	0.1	3.3	0.3	0.1	3.7	0.0	0.2	0.2	0.1	0.1	0.1	0.1
Fuel Eff. (mpg)	32.1	32.0	33.1	32.3	32.4	32.4	20.0	19.5	23.6	22.4	21.6	27.2
HC Emissions (g)	0	19	4	0	24	0	1	1	1	1	1	0
CO Emissions (g)	7	516	70	6	596	4	32	35	27	27	28	9
NOx Emissions (g)	1	71	10	1	86	1	3	3	3	3	3	1
Vehicles Entered	11	486	44	7	425	6	54	55	35	38	33	21
Vehicles Exited	11	486	44	7	428	6	54	55	36	38	34	21
Hourly Exit Rate	11	486	44	7	428	6	54	55	36	38	34	21
Input Volume	10	486	39	8	428	5	54	56	36	42	34	17
% of Volume	110	100	113	88	100	120	100	98	100	90	100	124
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	3.0
Total Del/Veh (s)	8.8
Stop Delay (hr)	2.0
Stop Del/Veh (s)	5.8
Total Stops	564
Stop/Veh	0.46
Travel Dist (mi)	254.5
Travel Time (hr)	13.5
Avg Speed (mph)	19
Fuel Used (gal)	8.1
Fuel Eff. (mpg)	31.3
HC Emissions (g)	51
CO Emissions (g)	1357
NOx Emissions (g)	186
Vehicles Entered	1215
Vehicles Exited	1220
Hourly Exit Rate	1220
Input Volume	1215
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	2.5	2.5
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	9.3	9.3
Travel Time (hr)	0.6	0.6
Avg Speed (mph)	16	16
Fuel Used (gal)	0.8	0.8
Fuel Eff. (mpg)	12.2	12.2
HC Emissions (g)	10	10
CO Emissions (g)	471	471
NOx Emissions (g)	37	37
Vehicles Entered	184	184
Vehicles Exited	184	184
Hourly Exit Rate	184	184
Input Volume	188	188
% of Volume	98	98
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.1	0.1
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	6.3	6.3
Travel Time (hr)	0.2	0.2
Avg Speed (mph)	29	29
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	34.9	34.9
HC Emissions (g)	2	2
CO Emissions (g)	40	40
NOx Emissions (g)	7	7
Vehicles Entered	83	83
Vehicles Exited	83	83
Hourly Exit Rate	83	83
Input Volume	81	81
% of Volume	102	102
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	0.6
Total Delay (hr)	52.3
Total Del/Veh (s)	43.3
Stop Delay (hr)	40.5
Stop Del/Veh (s)	33.6
Total Stops	4922
Stop/Veh	1.13
Travel Dist (mi)	2582.9
Travel Time (hr)	147.1
Avg Speed (mph)	18
Fuel Used (gal)	98.3
Fuel Eff. (mpg)	26.3
HC Emissions (g)	935
CO Emissions (g)	26377
NOx Emissions (g)	3031
Vehicles Entered	4196
Vehicles Exited	4192
Hourly Exit Rate	4192
Input Volume	14219
% of Volume	29
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	42.1	64.8	0.2	11
Commerce St.	7	8.4	10.9	0.0	7
Total		50.5	75.6	0.2	10

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.1	3.9	0.0	19
Total		1.1	3.9	0.0	19

Queuing and Blocking Report

2024 Background PM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	395	171	70	62	181	174	150	19	103	284	306
Average Queue (ft)	220	70	24	29	84	63	79	1	25	136	150
95th Queue (ft)	422	135	57	55	151	131	133	18	73	237	263
Link Distance (ft)	1223	1223			1020	1020			2273	2273	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			200		100			100	100		
Storage Blk Time (%)					5	1	3			14	
Queuing Penalty (veh)					12	3	4			7	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	144	169	174	296	525	250
Average Queue (ft)	71	81	87	197	228	65
95th Queue (ft)	131	137	181	295	432	151
Link Distance (ft)		808		278	1020	1020
Upstream Blk Time (%)				1		
Queuing Penalty (veh)				8		
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	0	6	20		
Queuing Penalty (veh)	0	0	33	18		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	247	407	92	58	200	293
Average Queue (ft)	175	134	73	46	110	132
95th Queue (ft)	263	336	85	66	200	254
Link Distance (ft)		776	58		278	
Upstream Blk Time (%)			45	4	2	
Queuing Penalty (veh)			222	0	17	
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	24	0	48	6	11	20
Queuing Penalty (veh)	46	1	57	22	48	54

Queuing and Blocking Report

2024 Background PM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	106	86	19	106	82
Average Queue (ft)	51	34	3	80	33
95th Queue (ft)	128	174	33	113	88
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		3		41	4
Queuing Penalty (veh)		0		198	25
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	17	0			
Queuing Penalty (veh)	3	0			

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	50	139	545	74
Average Queue (ft)	10	34	218	33
95th Queue (ft)	41	109	525	76
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)				4
Queuing Penalty (veh)				25
Storage Bay Dist (ft)	75			
Storage Blk Time (%)		6		
Queuing Penalty (veh)		1		

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	211	197	127	84
Average Queue (ft)	105	93	57	41
95th Queue (ft)	179	166	102	76
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 807

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3889	3858	3852	3769	3723	3833	3915
Vehs Exited	3885	3863	3853	3757	3721	3805	3871
Starting Vehs	218	216	223	193	236	202	185
Ending Vehs	222	211	222	205	238	230	229
Denied Entry Before	134	133	85	157	104	197	120
Denied Entry After	351	365	269	334	277	408	326
Travel Distance (mi)	2240	2206	2223	2138	2131	2182	2191
Travel Time (hr)	445.3	473.4	399.2	462.7	441.0	512.9	418.1
Total Delay (hr)	363.4	392.7	318.0	384.6	363.1	432.8	337.7
Total Stops	4846	4680	4816	4741	4639	4741	4679
Fuel Used (gal)	158.9	164.5	148.0	160.2	155.6	173.1	151.7

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3814	3803	3767	3825
Vehs Exited	3787	3773	3740	3806
Starting Vehs	215	215	192	205
Ending Vehs	242	245	219	224
Denied Entry Before	184	31	106	124
Denied Entry After	356	258	257	319
Travel Distance (mi)	2156	2161	2128	2176
Travel Time (hr)	496.7	349.0	388.5	438.7
Total Delay (hr)	417.6	269.8	310.7	359.0
Total Stops	4717	4683	4739	4732
Fuel Used (gal)	169.1	135.0	142.6	155.9

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3889	3858	3852	3769	3723	3833	3915
Vehs Exited	3885	3863	3853	3757	3721	3805	3871
Starting Vehs	218	216	223	193	236	202	185
Ending Vehs	222	211	222	205	238	230	229
Denied Entry Before	134	133	85	157	104	197	120
Denied Entry After	351	365	269	334	277	408	326
Travel Distance (mi)	2240	2206	2223	2138	2131	2182	2191
Travel Time (hr)	445.3	473.4	399.2	462.7	441.0	512.9	418.1
Total Delay (hr)	363.4	392.7	318.0	384.6	363.1	432.8	337.7
Total Stops	4846	4680	4816	4741	4639	4741	4679
Fuel Used (gal)	158.9	164.5	148.0	160.2	155.6	173.1	151.7

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3814	3803	3767	3825
Vehs Exited	3787	3773	3740	3806
Starting Vehs	215	215	192	205
Ending Vehs	242	245	219	224
Denied Entry Before	184	31	106	124
Denied Entry After	356	258	257	319
Travel Distance (mi)	2156	2161	2128	2176
Travel Time (hr)	496.7	349.0	388.5	438.7
Total Delay (hr)	417.6	269.8	310.7	359.0
Total Stops	4717	4683	4739	4732
Fuel Used (gal)	169.1	135.0	142.6	155.9

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4
Denied Del/Veh (s)	0.1	0.2	3.8	0.6	0.0	0.0	0.0	1.4	0.2	0.2	0.6
Total Delay (hr)	1.1	0.2	3.4	0.5	0.3	1.9	0.5	1.2	1.1	0.1	10.3
Total Del/Veh (s)	53.6	7.1	57.7	9.3	10.5	11.5	4.3	15.6	9.7	6.0	15.2
Stop Delay (hr)	1.1	0.2	3.2	0.5	0.2	1.4	0.0	0.8	0.7	0.1	8.2
Stop Del/Veh (s)	51.1	6.2	54.6	8.4	7.5	8.8	0.3	10.5	6.4	4.1	12.2
Total Stops	66	100	194	196	58	161	0	199	116	22	1112
Stop/Veh	0.89	0.96	0.91	0.93	0.56	0.27	0.00	0.71	0.30	0.32	0.46
Travel Dist (mi)	16.9	23.9	8.6	8.6	20.9	115.5	78.4	117.9	164.7	29.4	584.9
Travel Time (hr)	1.8	1.2	4.0	1.0	1.1	6.0	3.4	5.4	6.6	1.2	31.8
Avg Speed (mph)	9	20	2	9	19	19	23	22	25	25	19
Fuel Used (gal)	0.8	0.7	1.1	0.4	0.8	4.9	2.8	3.6	5.0	0.8	20.9
Fuel Eff. (mpg)	22.3	32.7	7.5	24.1	25.8	23.7	28.3	33.1	32.9	35.1	28.0
HC Emissions (g)	2	7	4	2	6	57	32	33	50	7	201
CO Emissions (g)	96	159	160	77	246	1867	1002	682	1106	159	5552
NOx Emissions (g)	10	22	12	9	22	187	109	95	145	22	633
Vehicles Entered	73	103	213	211	103	579	401	274	383	69	2409
Vehicles Exited	72	103	207	211	103	583	400	274	386	68	2407
Hourly Exit Rate	72	103	207	211	103	583	400	274	386	68	2407
Input Volume	74	102	211	219	117	648	446	278	386	68	2549
% of Volume	97	101	98	96	88	90	90	99	100	100	94
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	0.6	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	1.2	2.7	1.2	4.7	2.8	0.5	13.1
Total Del/Veh (s)	59.6	22.3	35.2	26.3	23.8	6.3	23.8
Stop Delay (hr)	1.2	2.5	1.0	3.7	2.1	0.3	10.9
Stop Del/Veh (s)	55.8	20.7	30.5	20.8	18.3	4.1	19.7
Total Stops	70	404	132	341	232	167	1346
Stop/Veh	0.93	0.91	1.12	0.53	0.55	0.58	0.68
Travel Dist (mi)	11.1	67.0	7.7	42.2	81.0	59.5	268.6
Travel Time (hr)	1.7	5.4	1.5	6.3	5.6	2.8	23.3
Avg Speed (mph)	7	13	5	7	14	21	12
Fuel Used (gal)	0.6	2.3	0.5	2.8	3.4	2.0	11.8
Fuel Eff. (mpg)	17.4	28.7	14.1	14.9	23.7	29.2	22.7
HC Emissions (g)	4	19	2	19	32	22	99
CO Emissions (g)	162	578	87	582	950	675	3033
NOx Emissions (g)	12	54	10	74	108	73	331
Vehicles Entered	72	436	116	634	410	286	1954
Vehicles Exited	73	438	116	645	417	288	1977
Hourly Exit Rate	73	438	116	645	417	288	1977
Input Volume	75	443	144	768	407	292	2129
% of Volume	97	99	81	84	102	99	93
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	30.1	9.0	0.0	0.0	0.0	0.0	39.1
Denied Del/Veh (s)	290.9	286.3	0.1	0.0	0.0	0.0	95.1
Total Delay (hr)	25.4	4.9	1.8	0.2	1.2	0.7	34.2
Total Del/Veh (s)	264.5	168.9	14.6	6.4	22.5	10.4	85.0
Stop Delay (hr)	23.9	4.6	1.5	0.2	1.0	0.5	31.6
Stop Del/Veh (s)	248.9	157.1	12.3	5.5	18.5	7.0	78.5
Total Stops	600	160	111	114	159	74	1218
Stop/Veh	1.73	1.52	0.25	1.00	0.84	0.29	0.84
Travel Dist (mi)	47.5	14.9	10.4	2.5	12.5	16.6	104.4
Travel Time (hr)	57.3	14.5	2.1	0.4	1.7	1.3	77.3
Avg Speed (mph)	2	3	5	7	7	13	3
Fuel Used (gal)	14.3	3.7	1.0	0.2	0.8	0.9	20.7
Fuel Eff. (mpg)	3.3	4.0	10.9	15.8	16.5	17.9	5.0
HC Emissions (g)	41	16	7	2	5	9	79
CO Emissions (g)	1273	437	198	37	159	300	2404
NOx Emissions (g)	68	28	30	6	21	37	189
Vehicles Entered	325	100	436	114	190	255	1420
Vehicles Exited	315	100	436	113	190	255	1409
Hourly Exit Rate	315	100	436	113	190	255	1409
Input Volume	355	106	558	147	188	249	1603
% of Volume	89	94	78	77	101	102	88
Denied Entry Before	22	7	0	0	0	0	29
Denied Entry After	48	13	0	0	0	0	61

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	16.9	2.1	0.0	2.9	0.2	0.0	22.2
Total Del/Veh (s)	2176.5	1095.2	21.2	19.1	2.2	1.1	85.5
Stop Delay (hr)	17.0	2.1	0.0	2.6	0.1	0.0	21.8
Stop Del/Veh (s)	2179.7	1095.5	20.6	17.3	1.1	0.9	84.2
Total Stops	4	6	2	140	22	2	176
Stop/Veh	0.14	0.86	0.67	0.26	0.07	0.06	0.19
Travel Dist (mi)	0.9	0.3	0.1	10.4	7.3	0.8	19.8
Travel Time (hr)	17.0	2.1	0.0	3.3	0.5	0.1	23.0
Avg Speed (mph)	0	0	3	3	14	12	1
Fuel Used (gal)	3.9	0.5	0.0	1.3	0.5	0.0	6.1
Fuel Eff. (mpg)	0.2	0.7	8.1	8.1	16.1	25.2	3.2
HC Emissions (g)	16	0	0	9	5	0	30
CO Emissions (g)	372	26	1	215	158	10	782
NOx Emissions (g)	12	0	0	33	20	2	67
Vehicles Entered	13	5	3	537	320	36	914
Vehicles Exited	10	4	3	537	320	36	910
Hourly Exit Rate	10	4	3	537	320	36	910
Input Volume	28	7	4	675	325	31	1070
% of Volume	36	57	75	80	98	116	85
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	172.3	4.0	0.0	0.0	176.3
Denied Del/Veh (s)	0.0	0.0	912.1	955.0	0.0	0.0	559.1
Total Delay (hr)	0.5	7.0	38.2	0.9	0.1	0.1	46.7
Total Del/Veh (s)	132.1	231.0	286.7	268.4	5.8	1.2	179.6
Stop Delay (hr)	0.5	7.1	37.6	0.9	0.1	0.0	46.1
Stop Del/Veh (s)	130.0	233.8	282.3	264.9	4.4	0.5	177.3
Total Stops	18	84	207	3	24	11	347
Stop/Veh	1.38	0.77	0.43	0.25	0.46	0.04	0.37
Travel Dist (mi)	1.1	8.9	83.0	2.0	1.2	6.1	102.4
Travel Time (hr)	0.5	7.4	213.2	5.0	0.1	0.3	226.5
Avg Speed (mph)	2	1	2	2	8	20	2
Fuel Used (gal)	0.1	1.8	50.2	1.2	0.1	0.4	53.7
Fuel Eff. (mpg)	8.3	5.0	1.7	1.7	21.4	15.3	1.9
HC Emissions (g)	0	5	133	0	0	6	144
CO Emissions (g)	12	166	4119	60	10	235	4601
NOx Emissions (g)	1	11	133	1	1	21	167
Vehicles Entered	13	103	434	11	52	272	885
Vehicles Exited	12	99	441	11	52	272	887
Hourly Exit Rate	12	99	441	11	52	272	887
Input Volume	13	102	577	12	54	278	1036
% of Volume	92	97	76	92	96	98	86
Denied Entry Before	0	0	93	2	0	0	95
Denied Entry After	0	0	246	4	0	0	250

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.6	0.3	0.2	0.3	0.3	0.1	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.5	0.0	0.2	0.8	0.0	0.1	0.3	0.3	0.1	0.1	0.0
Total Del/Veh (s)	12.0	6.2	3.5	10.0	8.6	5.9	15.3	14.1	7.7	15.1	13.4	6.1
Stop Delay (hr)	0.0	0.3	0.0	0.1	0.5	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Stop Del/Veh (s)	8.7	4.0	2.4	6.8	5.2	4.6	13.0	11.2	6.3	13.3	11.3	5.6
Total Stops	1	109	4	43	150	0	21	45	86	16	22	6
Stop/Veh	1.00	0.37	0.40	0.62	0.45	0.00	0.75	0.68	0.72	0.73	0.69	0.67
Travel Dist (mi)	0.3	62.5	2.1	19.0	92.0	0.2	1.6	3.7	6.9	1.5	2.2	0.6
Travel Time (hr)	0.0	3.1	0.1	1.0	4.6	0.0	0.2	0.4	0.6	0.2	0.2	0.0
Avg Speed (mph)	19	21	21	19	20	19	8	9	11	10	11	14
Fuel Used (gal)	0.0	2.0	0.1	0.6	2.9	0.0	0.1	0.2	0.3	0.1	0.1	0.0
Fuel Eff. (mpg)	31.4	31.9	34.0	32.5	32.0	35.4	20.8	21.0	25.3	24.1	23.6	32.0
HC Emissions (g)	0	12	0	2	22	0	0	1	2	0	1	0
CO Emissions (g)	1	320	6	68	511	1	14	43	70	9	21	3
NOx Emissions (g)	0	44	1	9	74	0	1	4	7	1	2	0
Vehicles Entered	1	289	10	68	329	1	28	66	120	22	32	9
Vehicles Exited	1	291	10	68	329	1	27	65	120	22	32	9
Hourly Exit Rate	1	291	10	68	329	1	27	65	120	22	32	9
Input Volume	2	284	9	72	327	1	30	61	118	20	31	9
% of Volume	50	102	111	94	101	100	90	107	102	110	103	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	2.4
Total Del/Veh (s)	8.7
Stop Delay (hr)	1.7
Stop Del/Veh (s)	6.1
Total Stops	503
Stop/Veh	0.51
Travel Dist (mi)	192.6
Travel Time (hr)	10.3
Avg Speed (mph)	19
Fuel Used (gal)	6.2
Fuel Eff. (mpg)	31.1
HC Emissions (g)	40
CO Emissions (g)	1068
NOx Emissions (g)	144
Vehicles Entered	975
Vehicles Exited	975
Hourly Exit Rate	975
Input Volume	964
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.4	0.4
Total Del/Veh (s)	2.2	2.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	35.0	35.0
Travel Time (hr)	2.2	2.2
Avg Speed (mph)	16	16
Fuel Used (gal)	2.8	2.8
Fuel Eff. (mpg)	12.3	12.3
HC Emissions (g)	40	40
CO Emissions (g)	1724	1724
NOx Emissions (g)	144	144
Vehicles Entered	674	674
Vehicles Exited	673	673
Hourly Exit Rate	673	673
Input Volume	724	724
% of Volume	93	93
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.1	0.1
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	8.3	8.3
Travel Time (hr)	0.3	0.3
Avg Speed (mph)	29	29
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	35.0	35.0
HC Emissions (g)	2	2
CO Emissions (g)	35	35
NOx Emissions (g)	5	5
Vehicles Entered	110	110
Vehicles Exited	110	110
Hourly Exit Rate	110	110
Input Volume	112	112
% of Volume	98	98
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	219.3
Denied Del/Veh (s)	190.5
Total Delay (hr)	139.8
Total Del/Veh (s)	124.9
Stop Delay (hr)	129.5
Stop Del/Veh (s)	115.7
Total Stops	4732
Stop/Veh	1.17
Travel Dist (mi)	2175.7
Travel Time (hr)	438.7
Avg Speed (mph)	10
Fuel Used (gal)	155.9
Fuel Eff. (mpg)	14.0
HC Emissions (g)	973
CO Emissions (g)	28761
NOx Emissions (g)	2724
Vehicles Entered	3825
Vehicles Exited	3806
Hourly Exit Rate	3806
Input Volume	13887
% of Volume	27
Denied Entry Before	124
Denied Entry After	319

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	286.7	1602.6	0.2	2
Commerce St.	7	10.4	12.9	0.0	6
Total		297.2	1615.5	0.2	2

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.2	4.0	0.0	18
Total		1.2	4.0	0.0	18

Queuing and Blocking Report

2024 Buildout AM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	L	T	TR
Maximum Queue (ft)	138	94	227	157	139	79	123	138	177	166	145
Average Queue (ft)	62	41	155	12	62	37	63	80	87	61	64
95th Queue (ft)	117	74	231	95	106	70	113	129	152	127	126
Link Distance (ft)	1225	1225				1024	1024		2272	2272	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			200			100			100		
Storage Blk Time (%)			6	0		0	2	4	6	2	
Queuing Penalty (veh)			0	0		0	3	16	12	6	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	182	310	174	308	373	134
Average Queue (ft)	67	151	102	291	191	64
95th Queue (ft)	139	265	207	320	311	109
Link Distance (ft)	810		278	1024	1024	
Upstream Blk Time (%)			21			
Queuing Penalty (veh)			194			
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	7	5	37		
Queuing Penalty (veh)	0	5	39	54		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	825	92	58	188	239
Average Queue (ft)	249	796	72	45	82	64
95th Queue (ft)	251	816	84	64	160	162
Link Distance (ft)	776	58			278	
Upstream Blk Time (%)	85	54	4		0	
Queuing Penalty (veh)	0	377	0		1	
Storage Bay Dist (ft)	150		50	100		
Storage Blk Time (%)	82		5	6	3	
Queuing Penalty (veh)	87		83	29	16	5

Queuing and Blocking Report

2024 Buildout AM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	198	460	327	114	84
Average Queue (ft)	188	424	201	95	20
95th Queue (ft)	201	556	414	109	71
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		88	20	61	3
Queuing Penalty (veh)		0	0	417	11
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	100				
Queuing Penalty (veh)	7				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	B39	NB	SB
Directions Served	L	R	T	TR	LT
Maximum Queue (ft)	160	377	38	1056	72
Average Queue (ft)	34	212	21	1022	27
95th Queue (ft)	138	466	132	1040	69
Link Distance (ft)		412	746	1001	51
Upstream Blk Time (%)		14		96	4
Queuing Penalty (veh)		0		0	13
Storage Bay Dist (ft)	75				
Storage Blk Time (%)		67			
Queuing Penalty (veh)		9			

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	142	193	158	78
Average Queue (ft)	66	91	68	31
95th Queue (ft)	117	159	119	63
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

2024 Buildout AM Peak

11/22/2015

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1383

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	5244	5370	5371	5316	5376	5341	5327
Vehs Exited	5283	5310	5324	5295	5338	5327	5335
Starting Vehs	349	191	230	251	270	307	309
Ending Vehs	310	251	277	272	308	321	301
Denied Entry Before	100	92	18	21	147	170	62
Denied Entry After	329	190	198	127	236	246	190
Travel Distance (mi)	3027	3051	3053	3034	3075	3060	3048
Travel Time (hr)	596.6	389.7	390.0	344.2	499.3	574.6	414.8
Total Delay (hr)	485.6	277.8	277.8	232.8	386.5	462.2	302.8
Total Stops	8931	8298	7713	8273	8032	8352	8368
Fuel Used (gal)	214.8	167.9	168.0	156.5	193.3	210.0	173.6

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	5318	5257	5208	5313
Vehs Exited	5271	5245	5231	5296
Starting Vehs	250	313	307	275
Ending Vehs	297	325	284	293
Denied Entry Before	25	71	64	77
Denied Entry After	250	367	160	230
Travel Distance (mi)	3034	3019	2987	3039
Travel Time (hr)	426.1	570.4	415.1	462.1
Total Delay (hr)	314.9	459.8	305.7	350.6
Total Stops	8372	8499	8339	8316
Fuel Used (gal)	175.6	208.0	172.4	184.0

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

SimTraffic Simulation Summary
2024 Buildout PM Peak

11/22/2015

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	5244	5370	5371	5316	5376	5341	5327
Vehs Exited	5283	5310	5324	5295	5338	5327	5335
Starting Vehs	349	191	230	251	270	307	309
Ending Vehs	310	251	277	272	308	321	301
Denied Entry Before	100	92	18	21	147	170	62
Denied Entry After	329	190	198	127	236	246	190
Travel Distance (mi)	3027	3051	3053	3034	3075	3060	3048
Travel Time (hr)	596.6	389.7	390.0	344.2	499.3	574.6	414.8
Total Delay (hr)	485.6	277.8	277.8	232.8	386.5	462.2	302.8
Total Stops	8931	8298	7713	8273	8032	8352	8368
Fuel Used (gal)	214.8	167.9	168.0	156.5	193.3	210.0	173.6

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	5318	5257	5208	5313
Vehs Exited	5271	5245	5231	5296
Starting Vehs	250	313	307	275
Ending Vehs	297	325	284	293
Denied Entry Before	25	71	64	77
Denied Entry After	250	367	160	230
Travel Distance (mi)	3034	3019	2987	3039
Travel Time (hr)	426.1	570.4	415.1	462.1
Total Delay (hr)	314.9	459.8	305.7	350.6
Total Stops	8372	8499	8339	8316
Fuel Used (gal)	175.6	208.0	172.4	184.0

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	19.9	21.6	0.0	0.0	0.0	0.1	0.0	0.0	41.8
Denied Del/Veh (s)	0.2	0.2	218.0	211.5	0.1	0.0	0.1	1.1	0.3	0.3	43.9
Total Delay (hr)	2.0	0.8	6.1	1.5	1.4	4.5	0.6	3.5	6.1	2.2	28.7
Total Del/Veh (s)	33.1	12.0	70.1	15.7	23.6	38.5	5.6	29.5	36.6	29.3	30.0
Stop Delay (hr)	1.8	0.7	5.9	1.5	1.1	3.8	0.0	2.4	4.6	1.6	23.4
Stop Del/Veh (s)	30.1	10.8	67.4	15.1	19.1	32.8	0.3	19.8	27.3	21.6	24.5
Total Stops	173	215	275	274	181	358	11	388	464	199	2538
Stop/Veh	0.80	0.89	0.87	0.79	0.88	0.85	0.03	0.90	0.77	0.74	0.74
Travel Dist (mi)	49.2	54.9	12.4	13.9	41.3	83.9	75.8	181.5	253.1	113.6	879.4
Travel Time (hr)	4.0	3.2	26.6	23.9	2.9	7.5	3.4	9.9	14.7	6.2	102.3
Avg Speed (mph)	12	17	2	6	14	11	22	18	17	18	15
Fuel Used (gal)	1.9	1.7	6.4	5.7	1.8	4.1	2.7	5.9	8.7	3.7	42.7
Fuel Eff. (mpg)	25.7	31.7	1.9	2.4	22.9	20.5	27.9	30.5	29.1	30.7	20.6
HC Emissions (g)	10	15	15	14	15	41	30	51	77	34	301
CO Emissions (g)	288	355	541	473	562	1348	975	1117	1810	780	8250
NOx Emissions (g)	36	46	24	21	54	133	107	155	229	99	903
Vehicles Entered	212	238	308	344	205	415	391	419	586	262	3380
Vehicles Exited	212	237	306	344	205	415	392	422	590	264	3387
Hourly Exit Rate	212	237	306	344	205	415	392	422	590	264	3387
Input Volume	212	244	324	370	223	447	422	419	590	254	3505
% of Volume	100	97	94	93	92	93	93	101	100	104	97
Denied Entry Before	0	0	7	7	0	0	0	0	0	0	14
Denied Entry After	0	0	21	24	0	0	0	0	0	0	45

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	6.9	4.5	11.5
Denied Del/Veh (s)	3.4	0.6	0.1	0.0	34.9	34.6	17.7
Total Delay (hr)	1.7	1.5	0.9	3.7	26.5	2.4	36.9
Total Del/Veh (s)	65.8	16.0	41.4	20.3	129.7	18.7	55.6
Stop Delay (hr)	1.6	1.4	0.8	2.6	22.6	1.7	30.7
Stop Del/Veh (s)	62.4	14.3	36.1	14.0	110.8	12.6	46.2
Total Stops	94	319	99	419	1214	402	2547
Stop/Veh	0.99	0.92	1.24	0.63	1.65	0.85	1.07
Travel Dist (mi)	14.4	52.9	5.3	42.9	143.2	95.3	354.0
Travel Time (hr)	2.3	3.6	1.2	5.3	38.4	10.7	61.6
Avg Speed (mph)	6	15	5	8	5	15	7
Fuel Used (gal)	0.9	1.7	0.4	2.6	12.4	5.0	23.0
Fuel Eff. (mpg)	16.9	30.3	12.8	16.5	11.6	19.0	15.4
HC Emissions (g)	6	13	2	21	61	49	152
CO Emissions (g)	204	438	63	566	1906	1548	4726
NOx Emissions (g)	16	40	7	79	183	156	482
Vehicles Entered	94	344	79	651	700	464	2332
Vehicles Exited	92	345	79	651	698	465	2330
Hourly Exit Rate	92	345	79	651	698	465	2330
Input Volume	91	355	91	723	716	479	2455
% of Volume	101	97	87	90	97	97	95
Denied Entry Before	0	0	0	0	3	1	4
Denied Entry After	0	0	0	0	7	6	13

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	52.6	26.6	0.0	0.0	0.0	0.0	79.2
Denied Del/Veh (s)	451.9	447.5	0.0	0.0	0.0	0.0	148.8
Total Delay (hr)	22.3	7.8	1.8	0.2	3.1	3.9	39.2
Total Del/Veh (s)	219.6	155.1	16.7	6.6	35.2	29.1	76.6
Stop Delay (hr)	20.8	7.4	1.5	0.2	2.6	3.1	35.6
Stop Del/Veh (s)	205.0	145.6	14.2	5.7	29.9	23.0	69.6
Total Stops	688	300	132	107	308	261	1796
Stop/Veh	1.88	1.65	0.34	1.00	0.97	0.54	0.98
Travel Dist (mi)	51.1	25.9	9.2	2.4	20.8	30.9	140.3
Travel Time (hr)	76.8	35.5	2.1	0.3	4.0	5.0	123.6
Avg Speed (mph)	2	3	4	7	5	6	3
Fuel Used (gal)	18.8	8.7	0.9	0.2	1.5	2.1	32.2
Fuel Eff. (mpg)	2.7	3.0	10.7	15.5	14.2	14.5	4.4
HC Emissions (g)	44	30	7	1	8	15	104
CO Emissions (g)	1544	880	179	26	230	409	3267
NOx Emissions (g)	74	48	26	4	30	55	237
Vehicles Entered	346	174	385	106	315	477	1803
Vehicles Exited	345	174	384	106	314	478	1801
Hourly Exit Rate	345	174	384	106	314	478	1801
Input Volume	383	196	430	119	327	481	1936
% of Volume	90	89	89	89	96	99	93
Denied Entry Before	32	15	0	0	0	0	47
Denied Entry After	73	40	0	0	0	0	113

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	14.3	4.8	0.0	2.7	0.5	0.0	22.3
Total Del/Veh (s)	2714.7	1724.6	20.6	19.9	2.7	1.2	68.3
Stop Delay (hr)	14.3	4.8	0.0	2.5	0.2	0.0	21.8
Stop Del/Veh (s)	2715.9	1723.8	19.8	18.1	1.2	0.8	66.8
Total Stops	3	8	2	168	57	1	239
Stop/Veh	0.16	0.80	0.50	0.34	0.09	0.04	0.20
Travel Dist (mi)	0.4	0.5	0.1	9.4	14.1	0.6	25.2
Travel Time (hr)	14.3	4.8	0.0	3.1	1.1	0.1	23.4
Avg Speed (mph)	0	0	3	3	13	12	1
Fuel Used (gal)	3.3	1.1	0.0	1.2	1.0	0.0	6.6
Fuel Eff. (mpg)	0.1	0.4	8.4	7.9	14.5	22.4	3.8
HC Emissions (g)	0	0	0	8	10	1	18
CO Emissions (g)	157	55	1	196	293	12	713
NOx Emissions (g)	0	0	0	30	43	2	75
Vehicles Entered	6	7	4	489	622	28	1156
Vehicles Exited	4	6	4	489	621	28	1152
Hourly Exit Rate	4	6	4	489	621	28	1152
Input Volume	23	20	4	527	647	28	1249
% of Volume	17	30	100	93	96	100	92
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	24.6	0.7	0.0	0.0	25.4
Denied Del/Veh (s)	0.0	0.0	203.8	191.1	0.0	0.0	76.9
Total Delay (hr)	0.1	2.1	36.2	1.1	0.1	0.2	39.8
Total Del/Veh (s)	21.6	73.8	298.8	281.2	4.5	1.3	120.4
Stop Delay (hr)	0.0	2.1	36.5	1.1	0.1	0.0	39.9
Stop Del/Veh (s)	18.8	74.0	301.2	285.6	3.1	0.3	120.8
Total Stops	10	76	186	5	34	19	330
Stop/Veh	1.11	0.73	0.43	0.36	0.40	0.04	0.28
Travel Dist (mi)	0.8	9.0	74.3	2.4	1.9	12.2	100.6
Travel Time (hr)	0.1	2.5	63.3	1.9	0.2	0.6	68.6
Avg Speed (mph)	9	4	2	2	9	20	2
Fuel Used (gal)	0.0	0.7	15.8	0.5	0.1	0.8	17.8
Fuel Eff. (mpg)	26.8	13.7	4.7	4.9	21.9	14.8	5.6
HC Emissions (g)	0	3	51	0	1	11	66
CO Emissions (g)	3	79	1558	30	23	404	2097
NOx Emissions (g)	0	6	75	1	3	42	128
Vehicles Entered	9	102	395	13	86	541	1146
Vehicles Exited	9	102	391	12	86	541	1141
Hourly Exit Rate	9	102	391	12	86	541	1141
Input Volume	10	101	430	12	93	574	1220
% of Volume	90	101	91	100	92	94	94
Denied Entry Before	0	0	11	1	0	0	12
Denied Entry After	0	0	40	1	0	0	41

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.4	0.4	0.4	0.4	0.5	0.3	0.2	0.3	0.2	0.2	0.2
Total Delay (hr)	0.0	1.1	0.1	0.5	1.8	0.0	0.3	0.4	0.4	0.2	0.3	0.0
Total Del/Veh (s)	11.0	8.7	6.3	19.2	15.5	14.6	19.8	18.3	12.2	18.3	16.8	9.1
Stop Delay (hr)	0.0	0.7	0.0	0.4	1.3	0.0	0.3	0.3	0.3	0.2	0.2	0.0
Stop Del/Veh (s)	7.7	5.2	4.0	15.0	10.8	10.5	17.1	15.1	10.5	16.1	14.3	8.2
Total Stops	6	197	19	78	265	3	47	54	87	34	41	14
Stop/Veh	0.60	0.41	0.48	0.86	0.62	0.60	0.80	0.73	0.78	0.81	0.71	0.78
Travel Dist (mi)	2.1	101.6	8.6	25.3	117.4	1.4	3.4	4.1	6.4	2.9	4.0	1.2
Travel Time (hr)	0.1	5.3	0.4	1.5	6.6	0.1	0.5	0.5	0.7	0.3	0.4	0.1
Avg Speed (mph)	18	19	20	17	18	18	7	8	9	9	9	12
Fuel Used (gal)	0.1	3.2	0.3	0.8	3.8	0.0	0.2	0.2	0.3	0.1	0.2	0.0
Fuel Eff. (mpg)	30.5	31.7	32.9	31.1	30.9	31.3	18.0	18.0	21.1	20.9	20.9	25.1
HC Emissions (g)	0	20	3	4	25	0	1	2	3	1	2	0
CO Emissions (g)	8	524	59	118	615	4	42	60	90	30	55	10
NOx Emissions (g)	1	72	8	16	87	0	4	6	10	3	6	1
Vehicles Entered	10	470	40	90	418	5	59	73	112	42	58	18
Vehicles Exited	9	472	40	90	419	5	58	73	111	42	58	18
Hourly Exit Rate	9	472	40	90	419	5	58	73	111	42	58	18
Input Volume	10	468	39	89	408	5	54	77	112	42	56	17
% of Volume	90	101	103	101	103	100	107	95	99	100	104	106
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	5.2
Total Del/Veh (s)	13.3
Stop Delay (hr)	3.8
Stop Del/Veh (s)	9.7
Total Stops	845
Stop/Veh	0.60
Travel Dist (mi)	278.4
Travel Time (hr)	16.7
Avg Speed (mph)	17
Fuel Used (gal)	9.3
Fuel Eff. (mpg)	30.0
HC Emissions (g)	61
CO Emissions (g)	1614
NOx Emissions (g)	215
Vehicles Entered	1395
Vehicles Exited	1395
Hourly Exit Rate	1395
Input Volume	1377
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.5	0.5
Total Del/Veh (s)	2.0	2.0
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	42.5	42.5
Travel Time (hr)	2.6	2.6
Avg Speed (mph)	17	17
Fuel Used (gal)	3.4	3.4
Fuel Eff. (mpg)	12.6	12.6
HC Emissions (g)	44	44
CO Emissions (g)	1945	1945
NOx Emissions (g)	164	164
Vehicles Entered	814	814
Vehicles Exited	814	814
Hourly Exit Rate	814	814
Input Volume	841	841
% of Volume	97	97
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.2	0.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	14.3	14.3
Travel Time (hr)	0.5	0.5
Avg Speed (mph)	29	29
Fuel Used (gal)	0.4	0.4
Fuel Eff. (mpg)	33.9	33.9
HC Emissions (g)	5	5
CO Emissions (g)	104	104
NOx Emissions (g)	13	13
Vehicles Entered	188	188
Vehicles Exited	189	189
Hourly Exit Rate	189	189
Input Volume	184	184
% of Volume	103	103
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	164.5
Denied Del/Veh (s)	106.8
Total Delay (hr)	186.1
Total Del/Veh (s)	119.9
Stop Delay (hr)	166.4
Stop Del/Veh (s)	107.2
Total Stops	8316
Stop/Veh	1.49
Travel Dist (mi)	3038.7
Travel Time (hr)	462.1
Avg Speed (mph)	10
Fuel Used (gal)	184.0
Fuel Eff. (mpg)	16.5
HC Emissions (g)	1255
CO Emissions (g)	37301
NOx Emissions (g)	3830
Vehicles Entered	5313
Vehicles Exited	5296
Hourly Exit Rate	5296
Input Volume	18045
% of Volume	29
Denied Entry Before	77
Denied Entry After	230

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	298.8	522.7	0.2	2
Commerce St.	7	12.2	14.6	0.0	5
Total		311.0	537.3	0.2	2

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.3	4.1	0.0	18
Total		1.3	4.1	0.0	18

Queuing and Blocking Report

2024 Buildout PM Peak

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	246	169	232	230	225	189	207	231	199	200	542	497
Average Queue (ft)	120	76	191	84	121	102	121	132	20	165	248	249
95th Queue (ft)	206	134	261	262	229	169	181	192	117	237	473	431
Link Distance (ft)	1223	1223				1022	1022			2279	2279	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	100		
Storage Blk Time (%)			36	3		8	17	23		22	31	
Queuing Penalty (veh)			0	9		17	38	96		64	132	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	179	243	174	307	1038	1014
Average Queue (ft)	77	111	92	270	859	533
95th Queue (ft)	153	197	198	333	1204	1152
Link Distance (ft)	808		278	1022	1022	
Upstream Blk Time (%)			6	7	2	
Queuing Penalty (veh)			53	39	10	
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	1	1	4	35		
Queuing Penalty (veh)	5	1	32	32		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	822	91	58	200	304
Average Queue (ft)	249	781	73	45	148	195
95th Queue (ft)	250	871	84	64	232	314
Link Distance (ft)	776	58			278	
Upstream Blk Time (%)		79	55	3		5
Queuing Penalty (veh)		0	305	0		37
Storage Bay Dist (ft)	150		50	100		
Storage Blk Time (%)	81	6	59	5	25	37
Queuing Penalty (veh)	160	22	70	21	120	119

Queuing and Blocking Report
2024 Buildout PM Peak

11/22/2015

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	198	434	324	122	89
Average Queue (ft)	183	404	247	94	43
95th Queue (ft)	228	598	468	111	100
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		87	55	63	6
Queuing Penalty (veh)		0	0	336	40
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	96	0			
Queuing Penalty (veh)	19	0			

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	119	240	1054	74
Average Queue (ft)	13	92	972	37
95th Queue (ft)	64	217	1209	77
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)			81	5
Queuing Penalty (veh)			0	34
Storage Bay Dist (ft)	75			
Storage Blk Time (%)		36		
Queuing Penalty (veh)		4		

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	236	348	204	110
Average Queue (ft)	112	147	89	51
95th Queue (ft)	197	263	158	93
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

2024 Buildout PM Peak

11/22/2015

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1815

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3918	3799	3718	3698	3712	3752	3867
Vehs Exited	3872	3770	3739	3644	3713	3732	3845
Starting Vehs	220	215	244	185	231	225	214
Ending Vehs	266	244	223	239	230	245	236
Denied Entry Before	142	97	113	154	105	190	172
Denied Entry After	317	383	372	408	334	402	455
Travel Distance (mi)	2233	2170	2141	2089	2111	2151	2194
Travel Time (hr)	450.0	456.3	474.6	483.4	436.2	515.7	547.1
Total Delay (hr)	368.0	376.7	396.1	406.7	358.6	436.6	466.5
Total Stops	4654	4419	4383	4361	4268	4278	4459
Fuel Used (gal)	160.4	159.4	162.9	163.3	154.3	172.0	180.9

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3713	3827	3624	3764
Vehs Exited	3691	3806	3621	3743
Starting Vehs	222	225	214	216
Ending Vehs	244	246	217	237
Denied Entry Before	203	103	134	141
Denied Entry After	476	349	424	392
Travel Distance (mi)	2108	2151	2054	2140
Travel Time (hr)	573.9	456.9	497.3	489.1
Total Delay (hr)	496.5	377.7	421.9	410.5
Total Stops	4311	4460	4166	4378
Fuel Used (gal)	185.0	159.6	165.7	166.4

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3918	3799	3718	3698	3712	3752	3867
Vehs Exited	3872	3770	3739	3644	3713	3732	3845
Starting Vehs	220	215	244	185	231	225	214
Ending Vehs	266	244	223	239	230	245	236
Denied Entry Before	142	97	113	154	105	190	172
Denied Entry After	317	383	372	408	334	402	455
Travel Distance (mi)	2233	2170	2141	2089	2111	2151	2194
Travel Time (hr)	450.0	456.3	474.6	483.4	436.2	515.7	547.1
Total Delay (hr)	368.0	376.7	396.1	406.7	358.6	436.6	466.5
Total Stops	4654	4419	4383	4361	4268	4278	4459
Fuel Used (gal)	160.4	159.4	162.9	163.3	154.3	172.0	180.9

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3713	3827	3624	3764
Vehs Exited	3691	3806	3621	3743
Starting Vehs	222	225	214	216
Ending Vehs	244	246	217	237
Denied Entry Before	203	103	134	141
Denied Entry After	476	349	424	392
Travel Distance (mi)	2108	2151	2054	2140
Travel Time (hr)	573.9	456.9	497.3	489.1
Total Delay (hr)	496.5	377.7	421.9	410.5
Total Stops	4311	4460	4166	4378
Fuel Used (gal)	185.0	159.6	165.7	166.4

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.5
Denied Del/Veh (s)	0.1	0.1	4.7	0.9	0.0	0.0	0.0	1.4	0.2	0.2	0.7
Total Delay (hr)	1.2	0.2	3.3	0.6	0.3	0.9	0.4	2.2	0.9	0.1	10.2
Total Del/Veh (s)	56.4	7.5	54.9	10.3	11.9	6.0	3.4	28.3	8.6	5.0	15.3
Stop Delay (hr)	1.2	0.2	3.1	0.6	0.3	0.6	0.1	1.9	0.6	0.1	8.5
Stop Del/Veh (s)	54.0	6.7	51.8	9.5	9.1	3.8	0.7	23.8	5.5	3.2	12.7
Total Stops	64	100	177	193	59	89	48	220	104	18	1072
Stop/Veh	0.83	0.96	0.83	0.91	0.56	0.16	0.12	0.77	0.26	0.29	0.45
Travel Dist (mi)	17.4	23.8	8.2	8.0	20.8	108.6	77.8	120.8	169.2	27.3	582.0
Travel Time (hr)	1.9	1.2	3.9	1.1	1.1	4.8	3.4	6.5	6.7	1.1	31.8
Avg Speed (mph)	9	19	2	8	18	23	23	19	25	26	19
Fuel Used (gal)	0.8	0.7	1.1	0.4	0.8	4.4	2.8	3.9	5.1	0.8	20.8
Fuel Eff. (mpg)	21.5	32.6	7.3	22.0	25.6	24.8	27.9	30.9	33.0	35.5	28.0
HC Emissions (g)	3	7	4	3	6	54	32	35	55	8	206
CO Emissions (g)	104	152	150	77	249	1742	1022	786	1175	154	5611
NOx Emissions (g)	12	21	12	10	23	177	109	101	159	23	645
Vehicles Entered	76	103	214	211	103	552	388	277	389	63	2376
Vehicles Exited	76	103	213	211	103	550	388	277	388	62	2371
Hourly Exit Rate	76	103	213	211	103	550	388	277	388	62	2371
Input Volume	74	102	211	219	117	648	446	278	386	68	2549
% of Volume	103	101	101	96	88	85	87	100	101	91	93
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.3	0.6	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	1.4	2.8	1.3	5.3	2.3	0.4	13.5
Total Del/Veh (s)	69.3	22.5	40.9	31.4	20.0	4.4	24.8
Stop Delay (hr)	1.3	2.6	1.1	4.5	1.8	0.2	11.5
Stop Del/Veh (s)	65.4	20.8	36.3	26.5	15.5	2.2	21.2
Total Stops	70	404	126	303	176	129	1208
Stop/Veh	0.95	0.90	1.12	0.50	0.42	0.43	0.62
Travel Dist (mi)	11.3	68.0	7.4	39.7	80.1	61.9	268.5
Travel Time (hr)	1.9	5.5	1.6	6.8	5.2	2.8	23.7
Avg Speed (mph)	6	13	5	6	15	22	11
Fuel Used (gal)	0.7	2.4	0.6	2.9	3.3	2.1	11.9
Fuel Eff. (mpg)	16.4	28.8	13.2	13.7	24.5	29.5	22.6
HC Emissions (g)	6	19	3	20	32	22	102
CO Emissions (g)	193	584	106	597	918	687	3086
NOx Emissions (g)	16	54	12	74	104	73	333
Vehicles Entered	74	444	111	601	407	296	1933
Vehicles Exited	73	442	111	601	406	295	1928
Hourly Exit Rate	73	442	111	601	406	295	1928
Input Volume	75	443	144	768	407	292	2129
% of Volume	97	100	77	78	100	101	91
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	80.8	24.3	0.0	0.0	0.0	0.0	105.1
Denied Del/Veh (s)	730.8	742.5	0.1	0.0	0.0	0.0	254.2
Total Delay (hr)	26.0	5.0	1.8	0.2	1.3	0.7	34.9
Total Del/Veh (s)	300.2	196.1	14.7	6.1	24.5	9.8	90.8
Stop Delay (hr)	24.7	4.7	1.5	0.2	1.1	0.5	32.6
Stop Del/Veh (s)	285.2	184.4	12.5	5.2	20.8	6.7	84.8
Total Stops	516	106	100	112	156	64	1054
Stop/Veh	1.65	1.16	0.23	1.00	0.84	0.26	0.76
Travel Dist (mi)	41.6	12.8	10.4	2.5	12.1	15.9	95.3
Travel Time (hr)	108.3	29.8	2.1	0.3	1.8	1.2	143.6
Avg Speed (mph)	2	2	5	7	7	13	2
Fuel Used (gal)	25.7	7.1	1.0	0.2	0.7	0.9	35.6
Fuel Eff. (mpg)	1.6	1.8	10.7	16.3	16.4	18.5	2.7
HC Emissions (g)	81	14	8	1	5	9	118
CO Emissions (g)	2271	577	216	24	163	292	3543
NOx Emissions (g)	94	23	32	4	21	34	208
Vehicles Entered	283	85	433	112	184	244	1341
Vehicles Exited	281	87	433	112	184	244	1341
Hourly Exit Rate	281	87	433	112	184	244	1341
Input Volume	355	106	558	147	188	249	1603
% of Volume	79	82	78	76	98	98	84
Denied Entry Before	40	13	0	0	0	0	53
Denied Entry After	115	33	0	0	0	0	148

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	17.4	2.0	0.0	3.0	0.2	0.0	22.6
Total Del/Veh (s)	2605.7	2395.4	14.8	20.0	1.9	0.7	90.0
Stop Delay (hr)	17.4	2.0	0.0	2.7	0.1	0.0	22.2
Stop Del/Veh (s)	2607.9	2396.6	13.4	18.2	0.9	0.4	88.6
Total Stops	4	2	1	128	19	1	155
Stop/Veh	0.17	0.67	0.33	0.24	0.06	0.03	0.17
Travel Dist (mi)	0.5	0.1	0.1	10.4	6.9	0.7	18.7
Travel Time (hr)	17.4	2.0	0.0	3.4	0.5	0.1	23.4
Avg Speed (mph)	0	0	4	3	15	13	1
Fuel Used (gal)	3.9	0.5	0.0	1.3	0.4	0.0	6.1
Fuel Eff. (mpg)	0.1	0.2	9.3	7.9	17.0	27.5	3.0
HC Emissions (g)	24	0	0	9	5	0	37
CO Emissions (g)	470	23	1	210	144	5	853
NOx Emissions (g)	17	0	0	32	18	1	69
Vehicles Entered	9	2	3	537	303	29	883
Vehicles Exited	6	1	3	537	303	29	879
Hourly Exit Rate	6	1	3	537	303	29	879
Input Volume	28	7	4	675	325	31	1070
% of Volume	21	14	75	80	93	94	82
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	148.9	3.0	0.0	0.0	152.0
Denied Del/Veh (s)	0.0	0.0	804.9	843.3	0.0	0.0	499.1
Total Delay (hr)	0.8	11.2	38.0	0.8	0.1	0.1	51.0
Total Del/Veh (s)	242.8	371.4	281.7	272.6	5.9	1.1	198.9
Stop Delay (hr)	0.8	11.4	37.1	0.7	0.1	0.0	50.2
Stop Del/Veh (s)	241.8	376.7	275.0	267.9	4.5	0.5	195.7
Total Stops	20	84	241	4	19	10	378
Stop/Veh	1.67	0.77	0.50	0.40	0.41	0.04	0.41
Travel Dist (mi)	1.0	8.6	84.1	1.8	1.0	5.8	102.4
Travel Time (hr)	0.8	11.6	189.8	3.9	0.1	0.3	206.5
Avg Speed (mph)	1	1	2	2	8	21	2
Fuel Used (gal)	0.2	2.7	44.8	0.9	0.0	0.4	49.1
Fuel Eff. (mpg)	4.9	3.2	1.9	1.9	20.9	15.9	2.1
HC Emissions (g)	0	7	127	0	0	5	140
CO Emissions (g)	16	245	3800	47	11	207	4327
NOx Emissions (g)	1	14	129	1	2	18	165
Vehicles Entered	12	101	442	9	46	258	868
Vehicles Exited	11	97	444	10	46	258	866
Hourly Exit Rate	11	97	444	10	46	258	866
Input Volume	13	102	577	12	54	278	1036
% of Volume	85	95	77	83	85	93	84
Denied Entry Before	0	0	86	2	0	0	88
Denied Entry After	0	0	224	4	0	0	228

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.7	0.3	0.3	1.6	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.2	0.6	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Total Del/Veh (s)	11.6	5.5	2.9	10.3	6.3	2.5	11.7	12.6	6.9	14.7	13.2	6.6
Stop Delay (hr)	0.0	0.3	0.0	0.1	0.3	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Stop Del/Veh (s)	9.3	3.3	1.7	7.3	3.5	1.4	9.2	9.9	5.7	12.8	11.0	6.0
Total Stops	1	105	3	42	128	0	19	43	90	16	25	7
Stop/Veh	1.00	0.37	0.33	0.66	0.39	0.00	0.68	0.68	0.74	0.76	0.74	0.70
Travel Dist (mi)	0.3	60.9	2.0	17.7	90.1	0.5	1.6	3.6	6.8	1.4	2.3	0.7
Travel Time (hr)	0.0	2.9	0.1	0.9	4.2	0.0	0.2	0.4	0.6	0.1	0.2	0.1
Avg Speed (mph)	18	21	21	19	21	23	10	10	12	10	11	13
Fuel Used (gal)	0.0	1.9	0.1	0.6	2.8	0.0	0.1	0.2	0.3	0.1	0.1	0.0
Fuel Eff. (mpg)	29.9	32.2	34.1	32.0	32.5	34.3	22.1	21.5	25.4	23.4	24.0	29.2
HC Emissions (g)	0	13	0	3	24	0	1	1	2	0	1	0
CO Emissions (g)	1	331	6	83	532	1	22	39	71	10	27	4
NOx Emissions (g)	0	46	1	11	78	0	3	4	8	1	3	0
Vehicles Entered	1	282	9	63	321	2	28	63	121	21	34	10
Vehicles Exited	1	282	9	63	322	2	28	63	121	20	34	10
Hourly Exit Rate	1	282	9	63	322	2	28	63	121	20	34	10
Input Volume	2	284	9	72	327	1	30	61	118	20	31	9
% of Volume	50	99	100	88	98	200	93	103	103	100	110	111
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	2.0
Total Del/Veh (s)	7.3
Stop Delay (hr)	1.3
Stop Del/Veh (s)	5.0
Total Stops	479
Stop/Veh	0.50
Travel Dist (mi)	187.7
Travel Time (hr)	9.8
Avg Speed (mph)	19
Fuel Used (gal)	6.0
Fuel Eff. (mpg)	31.4
HC Emissions (g)	45
CO Emissions (g)	1126
NOx Emissions (g)	154
Vehicles Entered	955
Vehicles Exited	955
Hourly Exit Rate	955
Input Volume	964
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.5	0.5
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.2	0.2
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	33.3	33.3
Travel Time (hr)	1.8	1.8
Avg Speed (mph)	18	18
Fuel Used (gal)	2.8	2.8
Fuel Eff. (mpg)	12.0	12.0
HC Emissions (g)	40	40
CO Emissions (g)	1796	1796
NOx Emissions (g)	143	143
Vehicles Entered	665	665
Vehicles Exited	665	665
Hourly Exit Rate	665	665
Input Volume	724	724
% of Volume	92	92
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.1	0.1
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	8.1	8.1
Travel Time (hr)	0.3	0.3
Avg Speed (mph)	29	29
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	34.8	34.8
HC Emissions (g)	2	2
CO Emissions (g)	45	45
NOx Emissions (g)	6	6
Vehicles Entered	107	107
Vehicles Exited	107	107
Hourly Exit Rate	107	107
Input Volume	112	112
% of Volume	96	96
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	263.4
Denied Del/Veh (s)	228.2
Total Delay (hr)	147.1
Total Del/Veh (s)	133.1
Stop Delay (hr)	138.0
Stop Del/Veh (s)	124.8
Total Stops	4378
Stop/Veh	1.10
Travel Dist (mi)	2140.3
Travel Time (hr)	489.1
Avg Speed (mph)	9
Fuel Used (gal)	166.4
Fuel Eff. (mpg)	12.9
HC Emissions (g)	1036
CO Emissions (g)	29995
NOx Emissions (g)	2776
Vehicles Entered	3764
Vehicles Exited	3743
Hourly Exit Rate	3743
Input Volume	13887
% of Volume	27
Denied Entry Before	141
Denied Entry After	392

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	281.7	1405.7	0.2	2
Commerce St.	7	10.4	12.9	0.0	6
Total		292.1	1418.6	0.2	2

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.1	3.9	0.0	19
Total		1.1	3.9	0.0	19

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	L	T
Maximum Queue (ft)	154	80	218	171	141	89	108	120	71	124	134	154
Average Queue (ft)	64	41	157	17	68	32	32	52	28	53	74	51
95th Queue (ft)	126	70	227	112	116	69	80	99	61	101	116	115
Link Distance (ft)	1218	1218				1011	1011					2294
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	400	400	
Storage Blk Time (%)			4	1		0	0	1	0			
Queuing Penalty (veh)			0	1		0	0	4	0			

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	SB
Directions Served	TR
Maximum Queue (ft)	154
Average Queue (ft)	59
95th Queue (ft)	125
Link Distance (ft)	2294
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	202	326	174	308	314	99
Average Queue (ft)	73	149	93	296	161	48
95th Queue (ft)	155	286	197	309	279	81
Link Distance (ft)	809		278	1011	1011	
Upstream Blk Time (%)			31			
Queuing Penalty (veh)			285			
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	0	7	6	42		
Queuing Penalty (veh)	1	6	49	61		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	827	93	58	184	230
Average Queue (ft)	248	795	71	45	83	61
95th Queue (ft)	253	810	86	61	168	162
Link Distance (ft)		776	58			278
Upstream Blk Time (%)		90	55	4		0
Queuing Penalty (veh)		0	385	0		0
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	85		57	5	7	2
Queuing Penalty (veh)	90		84	29	18	4

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	198	454	362	118	78
Average Queue (ft)	188	431	256	96	17
95th Queue (ft)	201	533	463	108	64
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		93	53	62	2
Queuing Penalty (veh)		0	0	418	9
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	100				
Queuing Penalty (veh)	7				

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	B39	NB	SB
Directions Served	L	R	T	TR	LT
Maximum Queue (ft)	175	458	112	1060	71
Average Queue (ft)	45	321	17	1023	24
95th Queue (ft)	167	554	90	1043	66
Link Distance (ft)		412	746	1001	51
Upstream Blk Time (%)		30		94	4
Queuing Penalty (veh)		0		0	12
Storage Bay Dist (ft)	75				
Storage Blk Time (%)	0	91			
Queuing Penalty (veh)	0	12			

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	18	128	71	143	127	76
Average Queue (ft)	1	61	28	68	61	31
95th Queue (ft)	9	110	62	121	102	64
Link Distance (ft)		1140		1479		352
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		100			
Storage Blk Time (%)		7	0	2		
Queuing Penalty (veh)		0	0	1		

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1475

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	5311	5359	5325	5246	5362	5283	5279
Vehs Exited	5301	5349	5272	5233	5352	5236	5266
Starting Vehs	245	265	266	281	298	249	264
Ending Vehs	255	275	319	294	308	296	277
Denied Entry Before	98	130	86	142	97	61	17
Denied Entry After	269	298	227	280	211	169	210
Travel Distance (mi)	3049	3082	3049	3033	3073	3034	3018
Travel Time (hr)	475.0	518.2	472.2	505.1	460.3	384.5	388.4
Total Delay (hr)	362.9	405.2	360.1	393.6	347.0	272.8	277.4
Total Stops	7488	7161	8429	7202	8153	6822	6842
Fuel Used (gal)	187.2	197.7	187.0	193.0	184.2	165.7	167.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	5405	5400	5339	5328
Vehs Exited	5387	5349	5296	5305
Starting Vehs	280	258	251	266
Ending Vehs	298	309	294	287
Denied Entry Before	142	70	50	88
Denied Entry After	368	241	215	248
Travel Distance (mi)	3108	3083	3064	3059
Travel Time (hr)	571.8	452.2	383.8	461.1
Total Delay (hr)	457.6	338.7	271.2	348.6
Total Stops	7660	7404	6732	7386
Fuel Used (gal)	210.8	182.8	166.7	184.2

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	5311	5359	5325	5246	5362	5283	5279
Vehs Exited	5301	5349	5272	5233	5352	5236	5266
Starting Vehs	245	265	266	281	298	249	264
Ending Vehs	255	275	319	294	308	296	277
Denied Entry Before	98	130	86	142	97	61	17
Denied Entry After	269	298	227	280	211	169	210
Travel Distance (mi)	3049	3082	3049	3033	3073	3034	3018
Travel Time (hr)	475.0	518.2	472.2	505.1	460.3	384.5	388.4
Total Delay (hr)	362.9	405.2	360.1	393.6	347.0	272.8	277.4
Total Stops	7488	7161	8429	7202	8153	6822	6842
Fuel Used (gal)	187.2	197.7	187.0	193.0	184.2	165.7	167.1

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	5405	5400	5339	5328
Vehs Exited	5387	5349	5296	5305
Starting Vehs	280	258	251	266
Ending Vehs	298	309	294	287
Denied Entry Before	142	70	50	88
Denied Entry After	368	241	215	248
Travel Distance (mi)	3108	3083	3064	3059
Travel Time (hr)	571.8	452.2	383.8	461.1
Total Delay (hr)	457.6	338.7	271.2	348.6
Total Stops	7660	7404	6732	7386
Fuel Used (gal)	210.8	182.8	166.7	184.2

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.5	0.3	0.0	0.0	0.0	0.2	0.1	0.0	1.0
Denied Del/Veh (s)	0.2	0.2	5.3	2.4	0.1	0.0	0.1	1.3	0.3	0.3	1.1
Total Delay (hr)	2.6	0.9	3.9	1.5	1.6	1.9	0.6	5.3	7.1	2.6	27.8
Total Del/Veh (s)	43.3	13.5	43.2	14.4	28.4	16.1	5.3	44.1	40.8	34.4	28.7
Stop Delay (hr)	2.4	0.8	3.6	1.4	1.4	1.5	0.2	4.4	5.6	2.0	23.3
Stop Del/Veh (s)	39.9	12.5	40.0	13.6	24.7	12.8	1.9	37.0	32.3	26.8	24.1
Total Stops	180	222	253	300	144	137	78	378	424	180	2296
Stop/Veh	0.85	0.92	0.78	0.81	0.72	0.33	0.20	0.87	0.68	0.67	0.66
Travel Dist (mi)	48.5	54.9	12.5	14.3	39.7	83.9	78.4	182.9	263.1	114.1	892.3
Travel Time (hr)	4.6	3.3	4.9	2.5	3.1	4.9	3.6	11.8	16.0	6.6	61.2
Avg Speed (mph)	11	17	3	6	13	17	22	16	17	17	15
Fuel Used (gal)	2.0	1.8	1.5	0.8	1.8	3.6	2.8	6.5	9.3	3.8	33.8
Fuel Eff. (mpg)	23.9	31.1	8.4	17.4	22.4	23.4	27.7	28.0	28.4	30.3	26.4
HC Emissions (g)	11	16	6	5	13	41	33	52	78	38	291
CO Emissions (g)	312	370	212	145	502	1343	1028	1262	1896	848	7919
NOx Emissions (g)	37	49	18	17	46	135	111	154	233	109	910
Vehicles Entered	210	238	320	369	198	418	391	419	603	262	3428
Vehicles Exited	208	239	318	368	196	416	388	425	612	264	3434
Hourly Exit Rate	208	239	318	368	196	416	388	425	612	264	3434
Input Volume	212	244	324	370	223	447	422	419	590	254	3505
% of Volume	98	98	98	99	88	93	92	101	104	104	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	1	0	0	0	0	0	0	0	1

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	2.8	1.4	4.4
Denied Del/Veh (s)	3.4	0.6	0.0	0.0	14.1	10.4	6.6
Total Delay (hr)	2.8	2.1	1.6	3.9	18.1	1.6	30.0
Total Del/Veh (s)	108.4	20.6	68.7	22.3	87.7	11.7	45.0
Stop Delay (hr)	2.7	1.9	1.5	2.9	14.4	0.9	24.3
Stop Del/Veh (s)	104.4	18.7	64.0	16.6	69.7	6.8	36.3
Total Stops	98	349	105	364	910	260	2086
Stop/Veh	1.05	0.95	1.28	0.58	1.23	0.53	0.87
Travel Dist (mi)	14.1	56.1	5.4	41.2	148.1	99.7	364.6
Travel Time (hr)	3.4	4.3	1.8	5.4	26.2	6.9	48.1
Avg Speed (mph)	4	13	3	8	6	18	8
Fuel Used (gal)	1.1	1.9	0.6	2.6	9.8	4.2	20.1
Fuel Eff. (mpg)	12.9	28.8	9.6	15.7	15.1	24.0	18.1
HC Emissions (g)	5	15	2	19	53	45	140
CO Emissions (g)	210	482	80	564	1752	1434	4522
NOx Emissions (g)	15	46	8	75	185	151	479
Vehicles Entered	92	364	81	625	720	484	2366
Vehicles Exited	89	364	78	626	728	486	2371
Hourly Exit Rate	89	364	78	626	728	486	2371
Input Volume	91	355	91	723	716	479	2455
% of Volume	98	103	86	87	102	101	97
Denied Entry Before	0	0	0	0	2	1	3
Denied Entry After	0	0	0	0	3	2	5

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	EBL	EBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	78.3	39.6	0.0	0.0	0.0	0.0	117.9
Denied Del/Veh (s)	655.3	657.5	0.0	0.0	0.0	0.0	216.8
Total Delay (hr)	23.1	8.1	1.8	0.2	2.7	4.1	40.0
Total Del/Veh (s)	241.5	172.7	16.7	6.9	29.6	29.6	78.4
Stop Delay (hr)	21.5	7.5	1.5	0.2	2.2	3.3	36.3
Stop Del/Veh (s)	225.4	160.8	14.3	6.0	24.0	23.7	71.1
Total Stops	633	274	111	105	302	237	1662
Stop/Veh	1.84	1.62	0.28	1.00	0.92	0.48	0.90
Travel Dist (mi)	47.0	24.2	9.3	2.3	21.4	31.8	136.0
Travel Time (hr)	103.1	48.7	2.1	0.3	3.6	5.2	163.0
Avg Speed (mph)	2	3	4	7	6	6	3
Fuel Used (gal)	24.7	11.7	0.9	0.2	1.4	2.2	41.0
Fuel Eff. (mpg)	1.9	2.1	10.5	15.6	15.4	14.5	3.3
HC Emissions (g)	75	38	6	1	8	14	143
CO Emissions (g)	2164	1121	164	30	230	409	4119
NOx Emissions (g)	96	55	25	5	30	53	264
Vehicles Entered	319	161	389	105	326	491	1791
Vehicles Exited	315	161	389	105	324	494	1788
Hourly Exit Rate	315	161	389	105	324	494	1788
Input Volume	383	196	430	119	327	481	1936
% of Volume	82	82	90	88	99	103	92
Denied Entry Before	44	25	0	0	0	0	69
Denied Entry After	111	56	0	0	0	0	167

7: Cummings St. & Commerce St. Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	14.9	4.9	0.0	2.8	0.5	0.0	23.1
Total Del/Veh (s)	2675.6	1758.6	21.6	20.7	2.9	1.1	70.6
Stop Delay (hr)	14.9	4.9	0.0	2.6	0.2	0.0	22.6
Stop Del/Veh (s)	2676.8	1757.8	20.6	18.9	1.4	0.7	69.1
Total Stops	4	8	2	148	62	1	225
Stop/Veh	0.20	0.80	0.50	0.30	0.10	0.04	0.19
Travel Dist (mi)	0.4	0.4	0.1	9.5	14.3	0.6	25.2
Travel Time (hr)	14.9	4.9	0.0	3.2	1.1	0.0	24.2
Avg Speed (mph)	0	0	2	3	13	12	1
Fuel Used (gal)	3.4	1.1	0.0	1.2	1.0	0.0	6.8
Fuel Eff. (mpg)	0.1	0.4	7.3	7.8	14.9	23.6	3.7
HC Emissions (g)	0	0	0	8	10	0	19
CO Emissions (g)	163	55	1	204	292	6	721
NOx Emissions (g)	0	0	0	31	43	1	76
Vehicles Entered	7	7	4	490	625	27	1160
Vehicles Exited	4	5	3	491	624	26	1153
Hourly Exit Rate	4	5	3	491	624	26	1153
Input Volume	23	20	4	527	647	28	1249
% of Volume	17	25	75	93	96	93	92
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	37.9	1.3	0.0	0.0	39.1
Denied Del/Veh (s)	0.0	0.0	305.6	330.7	0.0	0.0	117.5
Total Delay (hr)	0.1	3.4	37.9	1.2	0.1	0.2	42.9
Total Del/Veh (s)	25.4	118.2	315.8	301.6	5.2	1.4	130.1
Stop Delay (hr)	0.1	3.4	37.9	1.2	0.1	0.1	42.7
Stop Del/Veh (s)	22.6	119.0	315.9	303.6	3.8	0.4	129.6
Total Stops	11	82	176	4	32	20	325
Stop/Veh	1.10	0.80	0.41	0.29	0.39	0.04	0.27
Travel Dist (mi)	0.9	8.8	74.1	2.4	1.9	12.3	100.4
Travel Time (hr)	0.1	3.7	78.3	2.5	0.2	0.6	85.5
Avg Speed (mph)	9	2	2	2	9	19	2
Fuel Used (gal)	0.0	0.9	19.2	0.6	0.1	0.8	21.7
Fuel Eff. (mpg)	25.2	9.4	3.9	3.8	20.6	14.8	4.6
HC Emissions (g)	0	3	56	0	1	11	70
CO Emissions (g)	4	93	1746	35	19	410	2306
NOx Emissions (g)	0	7	75	1	3	43	129
Vehicles Entered	10	101	389	12	83	545	1140
Vehicles Exited	10	98	396	13	83	544	1144
Hourly Exit Rate	10	98	396	13	83	544	1144
Input Volume	10	101	430	12	93	574	1220
% of Volume	100	97	92	108	89	95	94
Denied Entry Before	0	0	16	0	0	0	16
Denied Entry After	0	0	57	2	0	0	59

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	2.4	0.4	0.4	1.7	0.5	0.6	0.3	0.3	0.3	0.2	0.2	0.2
Total Delay (hr)	0.0	1.1	0.1	0.4	0.8	0.0	0.2	0.3	0.3	0.2	0.2	0.0
Total Del/Veh (s)	12.7	8.3	5.9	17.1	7.5	6.0	14.0	15.3	10.0	14.6	13.8	7.4
Stop Delay (hr)	0.0	0.6	0.0	0.3	0.4	0.0	0.2	0.3	0.3	0.2	0.2	0.0
Stop Del/Veh (s)	9.8	4.7	3.3	13.8	3.9	3.7	11.4	12.2	8.5	12.6	11.3	6.4
Total Stops	8	219	18	72	165	2	40	59	88	37	42	14
Stop/Veh	0.73	0.46	0.46	0.83	0.40	0.40	0.71	0.75	0.78	0.79	0.70	0.78
Travel Dist (mi)	2.4	101.0	8.3	24.0	112.4	1.4	3.1	4.5	6.3	3.1	4.0	1.2
Travel Time (hr)	0.1	5.2	0.4	1.4	5.4	0.1	0.4	0.5	0.6	0.3	0.4	0.1
Avg Speed (mph)	17	20	20	17	21	20	9	9	10	10	10	13
Fuel Used (gal)	0.1	3.2	0.3	0.8	3.5	0.0	0.2	0.2	0.3	0.1	0.2	0.0
Fuel Eff. (mpg)	31.8	31.6	33.2	30.5	32.4	34.6	20.1	19.8	22.4	22.9	22.1	25.7
HC Emissions (g)	0	19	3	5	23	0	1	2	3	1	2	0
CO Emissions (g)	8	501	58	124	570	4	37	66	87	32	48	10
NOx Emissions (g)	1	69	8	17	82	0	4	7	10	3	5	1
Vehicles Entered	11	468	39	85	402	5	55	79	112	47	60	18
Vehicles Exited	11	469	39	85	400	5	55	79	113	47	60	18
Hourly Exit Rate	11	469	39	85	400	5	55	79	113	47	60	18
Input Volume	10	468	39	89	408	5	54	77	112	42	56	17
% of Volume	110	100	100	96	98	100	102	103	101	112	107	106
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.5
Total Delay (hr)	3.8
Total Del/Veh (s)	9.8
Stop Delay (hr)	2.6
Stop Del/Veh (s)	6.6
Total Stops	764
Stop/Veh	0.55
Travel Dist (mi)	271.8
Travel Time (hr)	15.1
Avg Speed (mph)	18
Fuel Used (gal)	8.8
Fuel Eff. (mpg)	30.7
HC Emissions (g)	57
CO Emissions (g)	1544
NOx Emissions (g)	208
Vehicles Entered	1381
Vehicles Exited	1381
Hourly Exit Rate	1381
Input Volume	1377
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	0.6	0.6
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	41.8	41.8
Travel Time (hr)	2.3	2.3
Avg Speed (mph)	18	18
Fuel Used (gal)	3.4	3.4
Fuel Eff. (mpg)	12.3	12.3
HC Emissions (g)	45	45
CO Emissions (g)	2064	2064
NOx Emissions (g)	168	168
Vehicles Entered	813	813
Vehicles Exited	811	811
Hourly Exit Rate	811	811
Input Volume	841	841
% of Volume	96	96
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.2	0.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	13.9	13.9
Travel Time (hr)	0.5	0.5
Avg Speed (mph)	29	29
Fuel Used (gal)	0.4	0.4
Fuel Eff. (mpg)	33.5	33.5
HC Emissions (g)	5	5
CO Emissions (g)	102	102
NOx Emissions (g)	13	13
Vehicles Entered	184	184
Vehicles Exited	184	184
Hourly Exit Rate	184	184
Input Volume	184	184
% of Volume	100	100
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	168.3
Denied Del/Veh (s)	108.6
Total Delay (hr)	180.4
Total Del/Veh (s)	116.1
Stop Delay (hr)	162.1
Stop Del/Veh (s)	104.4
Total Stops	7386
Stop/Veh	1.32
Travel Dist (mi)	3059.5
Travel Time (hr)	461.1
Avg Speed (mph)	10
Fuel Used (gal)	184.2
Fuel Eff. (mpg)	16.6
HC Emissions (g)	1275
CO Emissions (g)	37765
NOx Emissions (g)	3843
Vehicles Entered	5328
Vehicles Exited	5305
Hourly Exit Rate	5305
Input Volume	18045
% of Volume	29
Denied Entry Before	88
Denied Entry After	248

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	315.8	652.1	0.2	2
Commerce St.	7	11.8	14.3	0.0	5
Total		327.6	666.3	0.2	2

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	1.4	4.2	0.0	17
Total		1.4	4.2	0.0	17

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	L	T
Maximum Queue (ft)	271	167	226	219	219	170	168	155	124	230	266	492
Average Queue (ft)	141	80	183	45	116	89	62	70	45	122	154	236
95th Queue (ft)	236	134	243	189	198	156	136	122	91	202	290	550
Link Distance (ft)	1216	1216				1023	1023					2298
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	400	400	
Storage Blk Time (%)			11	4		10	2	3	0			4
Queuing Penalty (veh)			0	12		22	4	14	1			16

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	SB
Directions Served	TR
Maximum Queue (ft)	525
Average Queue (ft)	270
95th Queue (ft)	578
Link Distance (ft)	2298
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	236	354	174	309	966	878
Average Queue (ft)	103	141	97	295	679	306
95th Queue (ft)	211	283	194	310	1151	904
Link Distance (ft)	809		278	1023	1023	
Upstream Blk Time (%)			14	2	0	
Queuing Penalty (veh)			117	12	2	
Storage Bay Dist (ft)	200		75			
Storage Blk Time (%)	7	3	14	32		
Queuing Penalty (veh)	24	3	98	29		

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	250	825	89	58	200	306
Average Queue (ft)	249	796	72	44	151	201
95th Queue (ft)	250	811	84	64	239	328
Link Distance (ft)		776	58			278
Upstream Blk Time (%)		85	57	4		7
Queuing Penalty (veh)		0	312	0		54
Storage Bay Dist (ft)	150			50	100	
Storage Blk Time (%)	81	4	59	6	19	39
Queuing Penalty (veh)	159	15	71	25	91	128

Intersection: 7: Cummings St. & Commerce St.

Movement	EB	EB	B38	NB	SB
Directions Served	L	R	T	LT	TR
Maximum Queue (ft)	198	453	331	119	86
Average Queue (ft)	188	415	230	95	47
95th Queue (ft)	200	569	459	109	103
Link Distance (ft)		382	347	51	58
Upstream Blk Time (%)		88	46	64	7
Queuing Penalty (veh)		0	0	340	50
Storage Bay Dist (ft)	100				
Storage Blk Time (%)	100	0			
Queuing Penalty (veh)	20	0			

Intersection: 8: Cummings St. & Country Club Dr.

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	119	276	1051	72
Average Queue (ft)	13	123	1009	38
95th Queue (ft)	65	280	1109	79
Link Distance (ft)		412	1001	51
Upstream Blk Time (%)		1	92	6
Queuing Penalty (veh)		0	0	43
Storage Bay Dist (ft)	75			
Storage Blk Time (%)		50		
Queuing Penalty (veh)		5		

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	47	212	99	215	167	103
Average Queue (ft)	8	104	41	85	78	48
95th Queue (ft)	34	171	80	156	136	86
Link Distance (ft)		1140		1479		352
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		100			
Storage Blk Time (%)	0	19	0	3		
Queuing Penalty (veh)	1	2	1	3		

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1672

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	3332	3327	3242	3305	3234	3187	3288
Vehs Exited	3320	3308	3255	3292	3243	3177	3291
Starting Vehs	95	77	108	82	96	81	95
Ending Vehs	107	96	95	95	87	91	92
Denied Entry Before	0	0	0	0	0	1	0
Denied Entry After	1	1	0	0	0	0	0
Travel Distance (mi)	2021	2028	1963	1999	1997	1964	2005
Travel Time (hr)	90.6	89.9	87.2	89.9	88.7	87.7	89.6
Total Delay (hr)	17.9	17.2	16.7	17.9	17.1	16.8	17.4
Total Stops	2626	2498	2484	2612	2434	2435	2439
Fuel Used (gal)	69.9	69.8	68.5	69.3	69.2	67.8	69.7

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3337	3245	3183	3270
Vehs Exited	3340	3247	3158	3263
Starting Vehs	97	88	84	85
Ending Vehs	94	86	109	93
Denied Entry Before	1	0	0	0
Denied Entry After	0	0	0	0
Travel Distance (mi)	2026	1982	1936	1992
Travel Time (hr)	91.0	88.0	87.5	89.0
Total Delay (hr)	18.1	16.7	17.7	17.3
Total Stops	2636	2457	2463	2507
Fuel Used (gal)	71.0	68.8	67.1	69.1

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

SimTraffic Simulation Summary
2024 Background AM Peak LOOP RAMP

11/22/2015

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	3332	3327	3242	3305	3234	3187	3288
Vehs Exited	3320	3308	3255	3292	3243	3177	3291
Starting Vehs	95	77	108	82	96	81	95
Ending Vehs	107	96	95	95	87	91	92
Denied Entry Before	0	0	0	0	0	1	0
Denied Entry After	1	1	0	0	0	0	0
Travel Distance (mi)	2021	2028	1963	1999	1997	1964	2005
Travel Time (hr)	90.6	89.9	87.2	89.9	88.7	87.7	89.6
Total Delay (hr)	17.9	17.2	16.7	17.9	17.1	16.8	17.4
Total Stops	2626	2498	2484	2612	2434	2435	2439
Fuel Used (gal)	69.9	69.8	68.5	69.3	69.2	67.8	69.7

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	3337	3245	3183	3270
Vehs Exited	3340	3247	3158	3263
Starting Vehs	97	88	84	85
Ending Vehs	94	86	109	93
Denied Entry Before	1	0	0	0
Denied Entry After	0	0	0	0
Travel Distance (mi)	2026	1982	1936	1992
Travel Time (hr)	91.0	88.0	87.5	89.0
Total Delay (hr)	18.1	16.7	17.7	17.3
Total Stops	2636	2457	2463	2507
Fuel Used (gal)	71.0	68.8	67.1	69.1

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	4.0	0.1	0.0	0.0	0.0	0.7	0.1	0.1	0.1
Total Delay (hr)	0.7	0.2	0.4	0.0	0.3	0.9	0.2	0.1	0.6	0.1	3.4
Total Del/Veh (s)	31.6	5.6	33.1	6.2	10.3	4.6	3.1	12.6	4.6	3.1	6.7
Stop Delay (hr)	0.6	0.1	0.4	0.0	0.2	0.5	0.0	0.1	0.3	0.0	2.3
Stop Del/Veh (s)	29.5	4.9	31.2	5.8	7.3	2.3	0.2	9.5	2.3	1.5	4.5
Total Stops	69	93	36	21	74	145	0	17	93	18	566
Stop/Veh	0.87	0.90	0.88	0.95	0.63	0.20	0.00	0.71	0.21	0.25	0.31
Travel Dist (mi)	18.0	23.7	1.6	0.9	23.5	145.4	39.9	10.0	186.1	31.1	480.2
Travel Time (hr)	1.4	1.2	0.5	0.1	1.2	6.1	1.7	0.4	6.8	1.2	20.6
Avg Speed (mph)	13	20	4	10	19	24	24	23	27	27	23
Fuel Used (gal)	0.7	0.7	0.1	0.0	0.9	5.5	1.4	0.3	5.5	0.9	15.9
Fuel Eff. (mpg)	26.3	33.2	11.1	38.8	27.2	26.5	29.1	34.6	34.1	35.8	30.2
HC Emissions (g)	3	5	1	0	6	66	16	4	57	7	164
CO Emissions (g)	88	130	40	2	239	1978	492	70	1157	154	4350
NOx Emissions (g)	10	18	3	0	23	213	53	10	161	21	512
Vehicles Entered	78	102	41	21	116	726	203	23	428	72	1810
Vehicles Exited	77	102	41	21	115	728	203	23	430	72	1812
Hourly Exit Rate	77	102	41	21	115	728	203	23	430	72	1812
Input Volume	74	102	42	21	117	722	200	26	430	68	1802
% of Volume	104	100	98	100	98	101	102	88	100	106	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	0.5	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	0.6	1.2	0.6	1.4	0.8	0.2	4.8
Total Del/Veh (s)	28.1	10.8	14.3	7.7	7.8	3.4	9.3
Stop Delay (hr)	0.6	1.0	0.5	0.9	0.5	0.1	3.5
Stop Del/Veh (s)	25.3	8.7	11.8	5.0	5.0	1.7	6.8
Total Stops	60	316	97	198	102	85	858
Stop/Veh	0.76	0.77	0.68	0.31	0.29	0.38	0.46
Travel Dist (mi)	11.8	62.5	9.1	40.3	67.0	46.5	237.4
Travel Time (hr)	1.1	3.7	0.9	2.7	3.1	2.0	13.6
Avg Speed (mph)	11	17	10	15	22	23	18
Fuel Used (gal)	0.5	1.9	0.4	1.5	2.4	1.5	8.2
Fuel Eff. (mpg)	23.6	33.1	24.9	26.2	27.7	30.9	28.9
HC Emissions (g)	5	16	2	13	28	16	80
CO Emissions (g)	152	487	91	372	732	486	2318
NOx Emissions (g)	13	47	8	46	87	52	251
Vehicles Entered	77	408	142	638	349	224	1838
Vehicles Exited	77	408	142	637	349	224	1837
Hourly Exit Rate	77	408	142	637	349	224	1837
Input Volume	75	400	144	639	350	224	1832
% of Volume	103	102	99	100	100	100	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.1	0.1	0.1	0.6
Total Del/Veh (s)	1.7	1.6	1.4	1.3	1.6
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	0.2	0.2	0.1	0.1	0.2
Total Stops	4	0	0	0	4
Stop/Veh	0.01	0.00	0.00	0.00	0.00
Travel Dist (mi)	45.3	7.0	14.3	10.2	76.7
Travel Time (hr)	2.1	0.3	0.6	0.4	3.5
Avg Speed (mph)	21	20	24	23	22
Fuel Used (gal)	2.4	0.3	0.7	0.4	3.8
Fuel Eff. (mpg)	19.1	20.6	21.3	23.8	20.1
HC Emissions (g)	27	4	8	5	44
CO Emissions (g)	881	124	284	172	1461
NOx Emissions (g)	111	17	31	19	178
Vehicles Entered	784	143	216	153	1296
Vehicles Exited	783	143	215	153	1294
Hourly Exit Rate	783	143	215	153	1294
Input Volume	786	147	216	154	1303
% of Volume	100	97	100	99	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	2.6	0.5	3.0	0.1	0.1	0.3
Total Delay (hr)	2.3	0.1	0.1	0.2	0.0	1.4	0.0	0.2	0.5	4.8
Total Del/Veh (s)	30.7	4.7	23.4	8.9	6.3	8.8	2.1	14.2	5.9	12.5
Stop Delay (hr)	2.1	0.1	0.1	0.2	0.0	0.8	0.0	0.1	0.3	3.8
Stop Del/Veh (s)	27.0	4.2	21.6	8.9	4.0	5.1	1.2	12.4	4.0	9.7
Total Stops	237	77	10	70	1	193	4	32	84	708
Stop/Veh	0.86	0.73	0.77	0.80	0.33	0.34	0.33	0.76	0.30	0.51
Travel Dist (mi)	29.0	11.2	1.2	7.9	0.6	107.8	2.3	1.8	12.2	174.0
Travel Time (hr)	3.4	0.6	0.1	0.6	0.0	5.1	0.1	0.2	0.9	11.1
Avg Speed (mph)	8	19	9	14	22	21	24	8	14	16
Fuel Used (gal)	1.2	0.3	0.0	0.2	0.0	3.3	0.1	0.1	0.5	5.7
Fuel Eff. (mpg)	24.4	39.1	27.9	36.6	30.8	32.8	35.0	23.3	23.0	30.5
HC Emissions (g)	6	2	0	2	0	30	0	0	5	46
CO Emissions (g)	150	67	3	39	3	688	13	16	172	1152
NOx Emissions (g)	17	7	0	5	0	85	1	1	17	133
Vehicles Entered	272	106	13	88	3	569	12	42	277	1382
Vehicles Exited	273	105	13	88	3	567	12	42	276	1379
Hourly Exit Rate	273	105	13	88	3	567	12	42	276	1379
Input Volume	269	106	13	85	4	579	12	40	288	1396
% of Volume	101	99	100	104	75	98	100	105	96	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.3	0.3	0.3	0.3	0.1	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	0.4	0.0	0.0	0.6	0.0	0.1	0.2	0.1	0.1	0.1	0.0
Total Del/Veh (s)	7.2	5.5	3.7	9.2	6.1	3.7	12.3	14.2	6.4	14.5	13.8	5.5
Stop Delay (hr)	0.0	0.3	0.0	0.0	0.3	0.0	0.1	0.2	0.1	0.1	0.1	0.0
Stop Del/Veh (s)	5.2	3.4	2.3	6.5	3.5	2.2	10.0	11.6	5.4	12.7	11.7	4.9
Total Stops	1	101	4	6	120	0	20	36	50	16	11	6
Stop/Veh	0.50	0.35	0.36	0.55	0.34	0.00	0.67	0.71	0.72	0.76	0.69	0.75
Travel Dist (mi)	0.4	62.3	2.3	3.0	96.2	0.3	1.7	2.9	3.9	1.4	1.1	0.6
Travel Time (hr)	0.0	3.0	0.1	0.2	4.5	0.0	0.2	0.3	0.3	0.1	0.1	0.0
Avg Speed (mph)	20	21	21	20	22	22	10	9	12	10	10	14
Fuel Used (gal)	0.0	1.9	0.1	0.1	2.9	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Fuel Eff. (mpg)	30.9	31.9	33.9	31.4	32.7	33.2	21.5	21.2	26.9	24.9	24.5	30.3
HC Emissions (g)	0	16	0	0	20	0	1	1	2	0	0	0
CO Emissions (g)	2	376	7	9	483	1	20	33	51	8	8	3
NOx Emissions (g)	0	53	1	1	69	0	2	3	6	1	1	0
Vehicles Entered	2	288	11	11	343	1	29	51	69	21	16	8
Vehicles Exited	2	288	11	10	344	1	30	51	69	20	16	8
Hourly Exit Rate	2	288	11	10	344	1	30	51	69	20	16	8
Input Volume	2	295	9	10	341	1	30	47	69	20	14	9
% of Volume	100	98	122	100	101	100	100	109	100	100	114	89
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	1.7
Total Del/Veh (s)	7.0
Stop Delay (hr)	1.1
Stop Del/Veh (s)	4.8
Total Stops	371
Stop/Veh	0.43
Travel Dist (mi)	176.1
Travel Time (hr)	8.9
Avg Speed (mph)	20
Fuel Used (gal)	5.6
Fuel Eff. (mpg)	31.7
HC Emissions (g)	40
CO Emissions (g)	1001
NOx Emissions (g)	138
Vehicles Entered	850
Vehicles Exited	850
Hourly Exit Rate	850
Input Volume	847
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.2	0.2
Total Del/Veh (s)	2.5	2.5
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	11.2	11.2
Travel Time (hr)	0.7	0.7
Avg Speed (mph)	15	15
Fuel Used (gal)	0.9	0.9
Fuel Eff. (mpg)	11.9	11.9
HC Emissions (g)	14	14
CO Emissions (g)	593	593
NOx Emissions (g)	48	48
Vehicles Entered	226	226
Vehicles Exited	226	226
Hourly Exit Rate	226	226
Input Volume	226	226
% of Volume	100	100
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.0	0.0
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	2.8	2.8
Travel Time (hr)	0.1	0.1
Avg Speed (mph)	30	30
Fuel Used (gal)	0.1	0.1
Fuel Eff. (mpg)	35.4	35.4
HC Emissions (g)	0	0
CO Emissions (g)	6	6
NOx Emissions (g)	1	1
Vehicles Entered	37	37
Vehicles Exited	37	37
Hourly Exit Rate	37	37
Input Volume	33	33
% of Volume	112	112
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.4
Total Delay (hr)	16.9
Total Del/Veh (s)	18.2
Stop Delay (hr)	10.9
Stop Del/Veh (s)	11.7
Total Stops	2507
Stop/Veh	0.75
Travel Dist (mi)	1992.1
Travel Time (hr)	89.0
Avg Speed (mph)	22
Fuel Used (gal)	69.1
Fuel Eff. (mpg)	28.8
HC Emissions (g)	700
CO Emissions (g)	19401
NOx Emissions (g)	2222
Vehicles Entered	3270
Vehicles Exited	3263
Hourly Exit Rate	3263
Input Volume	10987
% of Volume	30
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	8.8	32.0	0.2	22
I-81 NB Ramps	6	2.0	9.0	0.1	22
I-81 SB Ramps	5	7.7	15.4	0.1	15
Proposed Access	1	5.1	29.0	0.2	26
Total		23.7	85.4	0.5	22

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cook St	1	4.6	56.3	0.4	28
I-81 SB Ramps	5	7.1	30.4	0.2	24
I-81 NB Ramps	6	1.6	9.6	0.1	25
	8	5.9	11.4	0.1	18
Total		19.2	107.7	0.8	26

Queuing and Blocking Report
2024 Background AM Peak LOOP RAMP

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	118	75	94	40	105	124	145	38	59	102	102
Average Queue (ft)	52	38	32	16	39	40	58	1	15	40	41
95th Queue (ft)	96	65	71	42	79	94	111	27	45	84	85
Link Distance (ft)	1224	1224			1024	1024			2294	2294	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			200		100			100	100		
Storage Blk Time (%)					0	1	1		0	0	
Queuing Penalty (veh)					1	1	2		0	0	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	126	224	170	272	181	80
Average Queue (ft)	45	99	51	129	70	37
95th Queue (ft)	95	178	110	233	146	68
Link Distance (ft)	809		288	1024	1024	
Upstream Blk Time (%)		0	0			
Queuing Penalty (veh)		0	2			
Storage Bay Dist (ft)	200		200			
Storage Blk Time (%)		1	2			
Queuing Penalty (veh)		1	2			

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	NB
Directions Served	TR
Maximum Queue (ft)	83
Average Queue (ft)	3
95th Queue (ft)	39
Link Distance (ft)	240
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
2024 Background AM Peak LOOP RAMP

11/22/2015

Intersection: 8: Cummings St. & Country Club Dr.

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	T	R	L	T
Maximum Queue (ft)	274	69	82	21	265	22	68	144
Average Queue (ft)	142	35	35	1	107	2	25	58
95th Queue (ft)	222	62	70	10	207	13	57	122
Link Distance (ft)	506		409		992		240	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		150		150	200	
Storage Blk Time (%)					3			
Queuing Penalty (veh)				0				

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	143	166	111	64
Average Queue (ft)	62	71	52	24
95th Queue (ft)	119	132	92	55
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 10

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4419	4470	4437	4300	4262	4287	4440
Vehs Exited	4401	4473	4458	4301	4247	4262	4424
Starting Vehs	113	128	129	125	104	105	121
Ending Vehs	131	125	108	124	119	130	137
Denied Entry Before	0	0	2	0	1	0	1
Denied Entry After	0	2	0	3	1	0	0
Travel Distance (mi)	2650	2706	2701	2542	2587	2581	2651
Travel Time (hr)	122.5	125.3	126.3	116.9	119.6	118.7	123.6
Total Delay (hr)	26.4	27.7	28.6	24.9	26.0	25.2	27.5
Total Stops	3525	3745	3705	3473	3484	3458	3669
Fuel Used (gal)	93.6	95.7	95.9	89.2	91.0	91.1	93.6

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4428	4449	4369	4387
Vehs Exited	4446	4437	4350	4379
Starting Vehs	123	107	123	113
Ending Vehs	105	119	142	119
Denied Entry Before	6	2	0	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	2675	2674	2621	2639
Travel Time (hr)	124.4	124.3	122.2	122.4
Total Delay (hr)	27.6	27.4	27.4	26.9
Total Stops	3686	3657	3601	3596
Fuel Used (gal)	95.4	94.8	93.2	93.4

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

SimTraffic Simulation Summary
2024 Background PM Peak LOOP RAMP

11/22/2015

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	4419	4470	4437	4300	4262	4287	4440
Vehs Exited	4401	4473	4458	4301	4247	4262	4424
Starting Vehs	113	128	129	125	104	105	121
Ending Vehs	131	125	108	124	119	130	137
Denied Entry Before	0	0	2	0	1	0	1
Denied Entry After	0	2	0	3	1	0	0
Travel Distance (mi)	2650	2706	2701	2542	2587	2581	2651
Travel Time (hr)	122.5	125.3	126.3	116.9	119.6	118.7	123.6
Total Delay (hr)	26.4	27.7	28.6	24.9	26.0	25.2	27.5
Total Stops	3525	3745	3705	3473	3484	3458	3669
Fuel Used (gal)	93.6	95.7	95.9	89.2	91.0	91.1	93.6

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	4428	4449	4369	4387
Vehs Exited	4446	4437	4350	4379
Starting Vehs	123	107	123	113
Ending Vehs	105	119	142	119
Denied Entry Before	6	2	0	0
Denied Entry After	0	1	1	0
Travel Distance (mi)	2675	2674	2621	2639
Travel Time (hr)	124.4	124.3	122.2	122.4
Total Delay (hr)	27.6	27.4	27.4	26.9
Total Stops	3686	3657	3601	3596
Fuel Used (gal)	95.4	94.8	93.2	93.4

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	4.1	0.1	0.1	0.0	0.1	0.8	0.2	0.2	0.2
Total Delay (hr)	2.0	0.5	0.2	0.1	1.3	0.8	0.1	0.2	2.3	0.7	8.3
Total Del/Veh (s)	35.0	7.8	35.9	6.7	20.7	5.5	2.8	16.3	12.1	9.7	12.4
Stop Delay (hr)	1.9	0.5	0.2	0.1	1.1	0.5	0.0	0.2	1.3	0.4	6.0
Stop Del/Veh (s)	32.0	6.6	34.0	6.3	17.3	3.2	0.2	11.4	6.9	5.2	8.9
Total Stops	177	206	20	58	181	121	0	38	274	112	1187
Stop/Veh	0.85	0.82	0.95	0.98	0.81	0.23	0.00	0.76	0.40	0.43	0.49
Travel Dist (mi)	47.6	57.5	0.9	2.4	44.5	103.7	27.3	21.3	295.8	111.2	712.2
Travel Time (hr)	4.0	3.0	0.3	0.2	2.9	4.5	1.1	1.0	12.3	4.7	34.0
Avg Speed (mph)	12	19	4	10	15	23	24	22	24	24	21
Fuel Used (gal)	1.9	1.8	0.1	0.1	1.8	3.9	0.9	0.6	9.0	3.2	23.2
Fuel Eff. (mpg)	25.4	32.6	10.7	35.0	24.9	26.6	30.2	33.4	33.0	34.6	30.7
HC Emissions (g)	11	14	0	0	17	47	12	6	88	32	228
CO Emissions (g)	301	349	15	13	541	1398	348	126	1950	677	5717
NOx Emissions (g)	38	46	1	1	56	149	38	17	259	91	697
Vehicles Entered	205	248	21	59	220	514	141	49	681	256	2394
Vehicles Exited	204	248	21	59	219	513	141	49	680	255	2389
Hourly Exit Rate	204	248	21	59	219	513	141	49	680	255	2389
Input Volume	212	244	23	61	223	505	139	49	687	254	2397
% of Volume	96	102	91	97	98	102	101	100	99	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.5	0.5	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	0.8	0.7	0.5	0.9	2.5	0.6	6.1
Total Del/Veh (s)	30.0	8.2	20.3	6.1	14.8	5.5	10.7
Stop Delay (hr)	0.7	0.6	0.5	0.6	1.4	0.2	4.0
Stop Del/Veh (s)	27.2	6.6	18.2	3.8	8.1	2.4	7.0
Total Stops	80	245	70	155	292	154	996
Stop/Veh	0.82	0.79	0.76	0.28	0.47	0.42	0.49
Travel Dist (mi)	14.8	47.3	5.8	34.9	124.9	74.1	301.8
Travel Time (hr)	1.5	2.6	0.8	2.1	6.9	3.4	17.2
Avg Speed (mph)	11	19	8	17	18	22	18
Fuel Used (gal)	0.6	1.4	0.3	1.2	4.9	2.6	11.0
Fuel Eff. (mpg)	23.1	33.9	22.5	28.2	25.6	28.3	27.4
HC Emissions (g)	4	15	2	11	47	33	111
CO Emissions (g)	162	411	57	298	1342	999	3270
NOx Emissions (g)	13	43	5	36	163	107	367
Vehicles Entered	96	308	92	552	612	364	2024
Vehicles Exited	97	308	91	552	611	363	2022
Hourly Exit Rate	97	308	91	552	611	363	2022
Input Volume	91	299	91	553	610	374	2018
% of Volume	107	103	100	100	100	97	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	0.0	0.3	0.2	0.8
Total Del/Veh (s)	1.4	1.4	2.6	2.1	1.9
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	0.2	0.2	0.1	0.1	0.2
Total Stops	0	0	3	1	4
Stop/Veh	0.00	0.00	0.01	0.00	0.00
Travel Dist (mi)	37.4	5.8	28.9	18.2	90.3
Travel Time (hr)	1.7	0.3	1.3	0.8	4.2
Avg Speed (mph)	22	20	22	22	22
Fuel Used (gal)	2.0	0.3	1.3	0.8	4.4
Fuel Eff. (mpg)	18.3	19.7	21.9	23.5	20.4
HC Emissions (g)	25	4	14	8	50
CO Emissions (g)	827	120	429	240	1615
NOx Emissions (g)	99	15	56	33	203
Vehicles Entered	648	118	434	274	1474
Vehicles Exited	649	118	434	274	1475
Hourly Exit Rate	649	118	434	274	1475
Input Volume	649	119	427	274	1469
% of Volume	100	99	102	100	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	2.8	0.4	3.0	0.2	0.9	0.4
Total Delay (hr)	2.3	0.6	0.1	0.1	0.0	0.8	0.0	0.3	1.4	5.6
Total Del/Veh (s)	29.8	10.9	23.4	6.3	11.1	7.2	1.5	13.7	8.7	12.2
Stop Delay (hr)	2.0	0.6	0.1	0.1	0.0	0.5	0.0	0.2	0.9	4.4
Stop Del/Veh (s)	26.2	10.0	21.6	6.3	9.1	4.3	1.0	11.5	5.6	9.6
Total Stops	232	153	7	60	2	130	3	48	213	848
Stop/Veh	0.84	0.75	0.78	0.81	0.50	0.31	0.25	0.69	0.36	0.51
Travel Dist (mi)	29.1	21.7	0.8	6.6	0.7	79.8	2.2	3.0	25.7	169.6
Travel Time (hr)	3.4	1.5	0.1	0.4	0.0	3.6	0.1	0.4	2.4	11.9
Avg Speed (mph)	9	14	9	16	19	23	25	8	11	14
Fuel Used (gal)	1.2	0.6	0.0	0.2	0.0	2.5	0.1	0.1	1.3	6.0
Fuel Eff. (mpg)	24.4	35.2	27.5	39.3	31.5	32.5	33.1	20.8	20.4	28.5
HC Emissions (g)	6	5	0	1	0	24	0	1	10	48
CO Emissions (g)	163	136	2	27	4	563	14	31	304	1243
NOx Emissions (g)	18	13	0	4	0	69	1	3	35	144
Vehicles Entered	273	204	9	74	4	420	12	69	586	1651
Vehicles Exited	273	204	9	74	4	420	12	70	586	1652
Hourly Exit Rate	273	204	9	74	4	420	12	70	586	1652
Input Volume	270	196	10	79	4	419	12	72	570	1632
% of Volume	101	104	90	94	100	100	100	97	103	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.4	0.5	0.4	0.3	0.4	0.4	0.2	0.2	0.2	0.1	0.1	0.1
Total Delay (hr)	0.0	1.0	0.1	0.0	0.9	0.0	0.2	0.3	0.1	0.2	0.2	0.0
Total Del/Veh (s)	11.5	7.6	5.5	10.9	7.2	3.7	16.3	17.1	9.3	16.1	15.5	7.2
Stop Delay (hr)	0.0	0.6	0.0	0.0	0.5	0.0	0.2	0.2	0.1	0.2	0.1	0.0
Stop Del/Veh (s)	8.0	4.2	3.2	8.4	4.0	1.8	14.0	14.3	8.2	14.0	13.1	6.3
Total Stops	6	191	16	5	163	1	40	42	28	33	26	10
Stop/Veh	0.67	0.39	0.41	0.62	0.38	0.17	0.77	0.72	0.74	0.75	0.72	0.71
Travel Dist (mi)	1.9	103.5	8.2	2.1	118.2	1.5	3.0	3.3	2.1	3.0	2.4	0.9
Travel Time (hr)	0.1	5.3	0.4	0.1	5.7	0.1	0.4	0.4	0.2	0.3	0.3	0.1
Avg Speed (mph)	18	20	20	19	21	22	8	8	10	9	10	13
Fuel Used (gal)	0.1	3.2	0.2	0.1	3.7	0.0	0.2	0.2	0.1	0.1	0.1	0.0
Fuel Eff. (mpg)	32.2	31.9	34.1	32.6	32.3	34.2	19.7	19.3	22.8	22.1	21.9	26.1
HC Emissions (g)	0	22	3	0	24	0	0	1	2	1	1	0
CO Emissions (g)	7	558	68	6	596	4	29	37	41	29	36	7
NOx Emissions (g)	1	78	10	1	86	1	3	4	5	3	4	1
Vehicles Entered	9	478	38	8	423	5	52	58	38	44	36	14
Vehicles Exited	9	480	38	7	421	6	52	58	37	44	35	14
Hourly Exit Rate	9	480	38	7	421	6	52	58	37	44	35	14
Input Volume	10	486	39	8	428	5	54	56	36	42	34	17
% of Volume	90	99	97	88	98	120	96	104	103	105	103	82
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	3.0
Total Del/Veh (s)	8.9
Stop Delay (hr)	2.0
Stop Del/Veh (s)	5.8
Total Stops	561
Stop/Veh	0.46
Travel Dist (mi)	250.3
Travel Time (hr)	13.3
Avg Speed (mph)	19
Fuel Used (gal)	8.0
Fuel Eff. (mpg)	31.3
HC Emissions (g)	56
CO Emissions (g)	1418
NOx Emissions (g)	196
Vehicles Entered	1203
Vehicles Exited	1201
Hourly Exit Rate	1201
Input Volume	1215
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	2.4	2.4
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	9.6	9.6
Travel Time (hr)	0.6	0.6
Avg Speed (mph)	16	16
Fuel Used (gal)	0.8	0.8
Fuel Eff. (mpg)	12.2	12.2
HC Emissions (g)	12	12
CO Emissions (g)	504	504
NOx Emissions (g)	41	41
Vehicles Entered	190	190
Vehicles Exited	190	190
Hourly Exit Rate	190	190
Input Volume	188	188
% of Volume	101	101
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.1	0.1
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	6.1	6.1
Travel Time (hr)	0.2	0.2
Avg Speed (mph)	29	29
Fuel Used (gal)	0.2	0.2
Fuel Eff. (mpg)	35.5	35.5
HC Emissions (g)	2	2
CO Emissions (g)	41	41
NOx Emissions (g)	6	6
Vehicles Entered	81	81
Vehicles Exited	81	81
Hourly Exit Rate	81	81
Input Volume	81	81
% of Volume	100	100
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	0.6
Denied Del/Veh (s)	0.5
Total Delay (hr)	26.2
Total Del/Veh (s)	21.0
Stop Delay (hr)	16.7
Stop Del/Veh (s)	13.3
Total Stops	3596
Stop/Veh	0.80
Travel Dist (mi)	2638.8
Travel Time (hr)	122.4
Avg Speed (mph)	22
Fuel Used (gal)	93.4
Fuel Eff. (mpg)	28.3
HC Emissions (g)	959
CO Emissions (g)	26456
NOx Emissions (g)	3081
Vehicles Entered	4387
Vehicles Exited	4379
Hourly Exit Rate	4379
Input Volume	13997
% of Volume	31
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	7.2	30.4	0.2	24
I-81 NB Ramps	6	1.5	8.5	0.1	23
I-81 SB Ramps	5	6.1	13.7	0.1	17
Proposed Access	1	5.2	29.4	0.2	25
Total		20.0	81.9	0.5	23

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cook St	1	12.1	64.1	0.4	25
I-81 SB Ramps	5	16.4	40.8	0.2	18
I-81 NB Ramps	6	2.8	10.8	0.1	22
	8	8.7	15.0	0.1	14
Total		40.0	130.7	0.8	21

Queuing and Blocking Report
2024 Background PM Peak LOOP RAMP

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	L	T	TR
Maximum Queue (ft)	220	135	58	65	172	104	105	113	224	250
Average Queue (ft)	116	65	20	31	84	35	49	30	108	121
95th Queue (ft)	193	105	50	57	144	82	92	80	193	215
Link Distance (ft)	1223	1223			1024	1024		2292	2292	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			200		100			100		
Storage Blk Time (%)					5	0	0	0	9	
Queuing Penalty (veh)					14	0	0	0	4	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	139	154	111	232	403	137
Average Queue (ft)	57	72	41	99	179	60
95th Queue (ft)	108	122	85	189	326	109
Link Distance (ft)	810		288	1024	1024	
Upstream Blk Time (%)			0	0		
Queuing Penalty (veh)			0	1		
Storage Bay Dist (ft)	200		200			
Storage Blk Time (%)	0		0			
Queuing Penalty (veh)	0		0			

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	NB	SB
Directions Served	TR	TR
Maximum Queue (ft)	17	78
Average Queue (ft)	1	4
95th Queue (ft)	12	39
Link Distance (ft)	240	288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
2024 Background PM Peak LOOP RAMP

11/22/2015

Intersection: 8: Cummings St. & Country Club Dr.

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	T	R	L	T
Maximum Queue (ft)	254	147	78	26	181	21	105	243
Average Queue (ft)	141	67	27	2	75	2	35	134
95th Queue (ft)	219	117	58	14	149	12	83	239
Link Distance (ft)	506		409		992		240	
Upstream Blk Time (%)						0	0	
Queuing Penalty (veh)						0	1	
Storage Bay Dist (ft)		400		150		150	200	
Storage Blk Time (%)					1		2	
Queuing Penalty (veh)					0		1	

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	223	185	133	102
Average Queue (ft)	109	90	60	43
95th Queue (ft)	184	160	109	81
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 22

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:30	6:30	6:30	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4114	4198	2922	3499	3617	4092	4235
Vehs Exited	4130	4209	2929	3418	3518	4073	4231
Starting Vehs	129	124	230	140	122	100	105
Ending Vehs	113	113	223	221	221	119	109
Denied Entry Before	0	0	366	1	0	2	0
Denied Entry After	0	0	1583	595	539	2	0
Travel Distance (mi)	2377	2411	1579	1886	1987	2340	2400
Travel Time (hr)	116.7	117.4	1200.4	320.5	305.1	115.3	116.7
Total Delay (hr)	30.1	29.8	1142.4	251.6	232.6	30.1	29.6
Total Stops	3765	3777	2213	2818	3252	3737	3772
Fuel Used (gal)	86.3	87.3	313.7	120.7	119.8	85.3	87.0

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:30	6:30	6:30	6:30
End Time	8:30	8:30	8:30	8:30
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4129	3998	3890	3869
Vehs Exited	4127	3901	3805	3834
Starting Vehs	102	109	113	126
Ending Vehs	104	206	198	159
Denied Entry Before	1	2	0	36
Denied Entry After	2	239	154	312
Travel Distance (mi)	2353	2213	2171	2172
Travel Time (hr)	115.2	169.8	138.7	271.6
Total Delay (hr)	29.6	89.1	59.8	192.5
Total Stops	3772	3459	3419	3398
Fuel Used (gal)	86.1	94.2	86.2	116.7

Interval #0 Information Seeding

Start Time	6:30
End Time	7:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	4114	4198	2922	3499	3617	4092	4235
Vehs Exited	4130	4209	2929	3418	3518	4073	4231
Starting Vehs	129	124	230	140	122	100	105
Ending Vehs	113	113	223	221	221	119	109
Denied Entry Before	0	0	366	1	0	2	0
Denied Entry After	0	0	1583	595	539	2	0
Travel Distance (mi)	2377	2411	1579	1886	1987	2340	2400
Travel Time (hr)	116.7	117.4	1200.4	320.5	305.1	115.3	116.7
Total Delay (hr)	30.1	29.8	1142.4	251.6	232.6	30.1	29.6
Total Stops	3765	3777	2213	2818	3252	3737	3772
Fuel Used (gal)	86.3	87.3	313.7	120.7	119.8	85.3	87.0

Interval #1 Information Recording

Start Time 7:30

End Time 8:30

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	4129	3998	3890	3869
Vehs Exited	4127	3901	3805	3834
Starting Vehs	102	109	113	126
Ending Vehs	104	206	198	159
Denied Entry Before	1	2	0	36
Denied Entry After	2	239	154	312
Travel Distance (mi)	2353	2213	2171	2172
Travel Time (hr)	115.2	169.8	138.7	271.6
Total Delay (hr)	29.6	89.1	59.8	192.5
Total Stops	3772	3459	3419	3398
Fuel Used (gal)	86.1	94.2	86.2	116.7

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3
Denied Del/Veh (s)	0.1	0.1	3.4	0.3	0.0	0.0	0.0	0.9	0.2	0.2	0.5
Total Delay (hr)	0.6	0.2	2.0	0.5	0.4	1.8	0.4	1.5	0.9	0.1	8.5
Total Del/Veh (s)	29.0	6.3	33.3	8.0	15.7	12.1	4.3	19.4	8.3	4.7	12.8
Stop Delay (hr)	0.6	0.2	1.8	0.4	0.3	1.3	0.0	1.1	0.5	0.1	6.3
Stop Del/Veh (s)	27.0	5.5	30.6	7.0	12.6	8.6	0.2	14.5	4.7	2.8	9.6
Total Stops	61	100	180	199	69	233	2	205	126	25	1200
Stop/Veh	0.82	0.95	0.85	0.88	0.70	0.43	0.01	0.72	0.32	0.36	0.51
Travel Dist (mi)	16.7	24.2	8.5	9.2	19.7	105.5	73.1	122.2	168.2	29.6	577.1
Travel Time (hr)	1.3	1.2	2.5	1.0	1.2	5.6	3.2	5.8	6.6	1.1	29.6
Avg Speed (mph)	13	20	4	9	17	19	23	21	26	26	20
Fuel Used (gal)	0.6	0.7	0.8	0.4	0.8	4.3	2.6	3.8	5.1	0.8	19.8
Fuel Eff. (mpg)	27.0	33.6	10.8	25.2	25.0	24.4	28.6	32.5	33.1	35.5	29.1
HC Emissions (g)	3	5	4	2	6	46	32	30	48	8	184
CO Emissions (g)	93	132	144	79	234	1561	951	639	1095	166	5095
NOx Emissions (g)	12	18	11	9	21	156	105	87	140	22	582
Vehicles Entered	72	104	208	226	97	529	373	282	388	67	2346
Vehicles Exited	73	105	208	226	96	532	373	280	387	68	2348
Hourly Exit Rate	73	105	208	226	96	532	373	280	387	68	2348
Input Volume	74	102	211	219	117	648	446	278	386	68	2549
% of Volume	99	103	99	103	82	82	84	101	100	100	92
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.3	0.6	0.0	0.0	0.0	0.0	0.3
Total Delay (hr)	0.6	1.7	0.6	1.7	1.2	0.3	6.0
Total Del/Veh (s)	29.1	13.3	19.3	10.9	10.5	4.3	11.5
Stop Delay (hr)	0.5	1.3	0.5	1.0	0.8	0.2	4.4
Stop Del/Veh (s)	26.2	10.7	16.4	6.8	7.1	2.2	8.3
Total Stops	55	336	80	205	146	115	937
Stop/Veh	0.77	0.75	0.77	0.37	0.35	0.39	0.50
Travel Dist (mi)	10.8	68.6	6.6	34.9	80.5	60.3	261.5
Travel Time (hr)	1.0	4.4	0.8	2.8	4.1	2.7	15.9
Avg Speed (mph)	11	16	8	12	20	22	17
Fuel Used (gal)	0.5	2.1	0.3	1.5	3.1	2.1	9.6
Fuel Eff. (mpg)	23.9	32.5	20.7	23.3	25.8	28.9	27.3
HC Emissions (g)	5	17	2	11	30	23	88
CO Emissions (g)	158	519	79	325	923	708	2713
NOx Emissions (g)	14	50	7	41	102	74	288
Vehicles Entered	70	445	102	551	409	291	1868
Vehicles Exited	70	447	103	552	408	290	1870
Hourly Exit Rate	70	447	103	552	408	290	1870
Input Volume	75	443	144	768	407	292	2129
% of Volume	93	101	72	72	100	99	88
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	3.2	0.5	0.1	0.1	3.9
Total Del/Veh (s)	17.5	18.0	1.7	1.5	11.8
Stop Delay (hr)	2.8	0.5	0.0	0.0	3.3
Stop Del/Veh (s)	15.2	16.1	0.1	0.1	9.9
Total Stops	21	3	0	0	24
Stop/Veh	0.03	0.03	0.00	0.00	0.02
Travel Dist (mi)	38.0	5.4	16.7	12.1	72.1
Travel Time (hr)	4.7	0.8	0.7	0.5	6.7
Avg Speed (mph)	8	7	24	23	11
Fuel Used (gal)	2.6	0.4	0.8	0.5	4.2
Fuel Eff. (mpg)	14.8	14.0	21.6	24.3	17.1
HC Emissions (g)	29	3	8	6	47
CO Emissions (g)	774	95	298	199	1366
NOx Emissions (g)	92	12	33	24	161
Vehicles Entered	659	109	250	182	1200
Vehicles Exited	656	109	250	182	1197
Hourly Exit Rate	656	109	250	182	1197
Input Volume	915	147	249	188	1499
% of Volume	72	74	100	97	80
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.9	68.9	1.1	0.0	0.0	70.9
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	640.1	398.8	346.9	0.1	0.2	176.1
Total Delay (hr)	9.0	0.5	0.7	4.6	0.2	13.5	0.1	0.3	0.7	29.5
Total Del/Veh (s)	118.2	19.9	238.3	202.1	198.7	104.6	47.8	16.6	7.6	81.8
Stop Delay (hr)	8.7	0.5	0.7	4.6	0.2	12.8	0.1	0.2	0.5	28.3
Stop Del/Veh (s)	114.1	19.2	236.6	201.7	195.1	99.7	46.7	14.7	5.6	78.5
Total Stops	233	58	8	64	2	219	3	39	104	730
Stop/Veh	0.85	0.66	0.73	0.78	0.67	0.47	0.38	0.71	0.33	0.56
Travel Dist (mi)	27.8	9.3	0.9	6.8	0.6	84.9	1.5	2.4	13.9	148.1
Travel Time (hr)	10.0	0.9	0.8	4.9	1.1	85.2	1.2	0.4	1.1	105.6
Avg Speed (mph)	3	11	1	1	3	5	9	7	12	4
Fuel Used (gal)	2.7	0.3	0.2	1.2	0.3	21.1	0.3	0.1	0.6	26.8
Fuel Eff. (mpg)	10.3	28.2	4.9	5.7	2.2	4.0	4.8	20.4	21.8	5.5
HC Emissions (g)	6	2	0	5	0	76	0	1	5	95
CO Emissions (g)	219	72	9	118	15	2039	22	24	191	2709
NOx Emissions (g)	16	6	0	6	0	103	1	2	19	153
Vehicles Entered	266	88	10	80	3	456	8	55	312	1278
Vehicles Exited	258	88	10	72	3	439	8	55	312	1245
Hourly Exit Rate	258	88	10	72	3	439	8	55	312	1245
Input Volume	355	106	13	102	4	605	12	54	308	1559
% of Volume	73	83	77	71	75	73	67	102	101	80
Denied Entry Before	0	0	0	0	0	20	0	0	0	20
Denied Entry After	0	0	0	0	2	166	3	0	0	171

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.3	0.2	0.4	0.3	0.2	0.2	0.2	0.3	0.1	0.1	0.1
Total Delay (hr)	0.0	0.5	0.0	0.2	0.8	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Total Del/Veh (s)	13.1	6.1	3.6	9.8	8.3	3.1	14.0	14.6	7.2	15.4	13.5	6.2
Stop Delay (hr)	0.0	0.3	0.0	0.1	0.5	0.0	0.1	0.2	0.2	0.1	0.1	0.0
Stop Del/Veh (s)	7.2	3.9	2.2	6.6	4.9	2.5	11.5	11.9	5.9	13.8	11.5	5.6
Total Stops	1	108	4	47	144	1	21	41	81	15	21	8
Stop/Veh	1.00	0.37	0.36	0.61	0.44	0.50	0.70	0.69	0.72	0.75	0.70	0.80
Travel Dist (mi)	0.3	62.3	2.3	21.4	91.7	0.4	1.7	3.4	6.4	1.3	2.0	0.7
Travel Time (hr)	0.0	3.0	0.1	1.1	4.5	0.0	0.2	0.4	0.6	0.1	0.2	0.1
Avg Speed (mph)	19	21	21	20	21	21	9	9	12	9	10	14
Fuel Used (gal)	0.0	1.9	0.1	0.7	2.8	0.0	0.1	0.2	0.3	0.1	0.1	0.0
Fuel Eff. (mpg)	29.5	32.0	34.5	32.5	32.3	34.6	21.0	20.7	25.6	24.2	24.2	29.3
HC Emissions (g)	0	13	0	2	22	0	1	1	2	0	1	0
CO Emissions (g)	1	333	7	74	511	1	22	44	71	7	24	4
NOx Emissions (g)	0	46	1	10	73	0	2	5	8	1	3	0
Vehicles Entered	1	288	10	76	327	2	30	59	112	19	30	10
Vehicles Exited	1	289	11	76	328	2	30	59	113	19	30	10
Hourly Exit Rate	1	289	11	76	328	2	30	59	113	19	30	10
Input Volume	2	284	9	72	327	1	30	61	118	20	31	9
% of Volume	50	102	122	106	100	200	100	97	96	95	97	111
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	2.3
Total Del/Veh (s)	8.4
Stop Delay (hr)	1.6
Stop Del/Veh (s)	5.9
Total Stops	492
Stop/Veh	0.50
Travel Dist (mi)	193.9
Travel Time (hr)	10.3
Avg Speed (mph)	19
Fuel Used (gal)	6.2
Fuel Eff. (mpg)	31.3
HC Emissions (g)	42
CO Emissions (g)	1098
NOx Emissions (g)	149
Vehicles Entered	964
Vehicles Exited	968
Hourly Exit Rate	968
Input Volume	964
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.4	0.4
Total Del/Veh (s)	2.0	2.0
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	34.2	34.2
Travel Time (hr)	2.1	2.1
Avg Speed (mph)	16	16
Fuel Used (gal)	2.8	2.8
Fuel Eff. (mpg)	12.4	12.4
HC Emissions (g)	37	37
CO Emissions (g)	1640	1640
NOx Emissions (g)	135	135
Vehicles Entered	654	654
Vehicles Exited	654	654
Hourly Exit Rate	654	654
Input Volume	724	724
% of Volume	90	90
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.2	0.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	8.9	8.9
Travel Time (hr)	0.3	0.3
Avg Speed (mph)	29	29
Fuel Used (gal)	0.3	0.3
Fuel Eff. (mpg)	34.8	34.8
HC Emissions (g)	2	2
CO Emissions (g)	48	48
NOx Emissions (g)	6	6
Vehicles Entered	117	117
Vehicles Exited	117	117
Hourly Exit Rate	117	117
Input Volume	112	112
% of Volume	104	104
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	131.2
Denied Del/Veh (s)	113.0
Total Delay (hr)	61.3
Total Del/Veh (s)	55.2
Stop Delay (hr)	53.1
Stop Del/Veh (s)	47.8
Total Stops	3398
Stop/Veh	0.85
Travel Dist (mi)	2171.5
Travel Time (hr)	271.6
Avg Speed (mph)	15
Fuel Used (gal)	116.7
Fuel Eff. (mpg)	18.6
HC Emissions (g)	859
CO Emissions (g)	25371
NOx Emissions (g)	2552
Vehicles Entered	3869
Vehicles Exited	3834
Hourly Exit Rate	3834
Input Volume	13737
% of Volume	28
Denied Entry Before	36
Denied Entry After	312

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	104.6	661.4	0.2	6
I-81 NB Ramps	6	22.0	29.0	0.1	7
I-81 SB Ramps	5	10.9	18.5	0.1	13
Proposed Access	1	14.5	38.3	0.2	19
Total		152.0	747.2	0.5	9

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cook St	1	8.3	60.3	0.4	27
I-81 SB Ramps	5	13.3	36.9	0.2	20
I-81 NB Ramps	6	1.9	9.9	0.1	24
	8	7.6	13.3	0.1	15
Total		31.1	120.3	0.8	23

Queuing and Blocking Report
2024 Buildout AM Peak LOOP RAMP

11/22/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	102	75	206	45	126	88	155	176	60	187	189	127
Average Queue (ft)	46	40	116	2	64	39	63	78	4	97	57	53
95th Queue (ft)	87	64	191	32	105	80	135	149	50	165	132	104
Link Distance (ft)	1224	1224				1021	1021			2292	2292	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	100		
Storage Blk Time (%)			1			0	3	5		9	1	
Queuing Penalty (veh)			0			1	3	21		17	2	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	129	241	187	275	241	109
Average Queue (ft)	43	115	46	130	100	48
95th Queue (ft)	98	208	130	298	192	87
Link Distance (ft)	810		288	1021	1021	
Upstream Blk Time (%)		0	1			
Queuing Penalty (veh)		0	8			
Storage Bay Dist (ft)	200		200			
Storage Blk Time (%)		2	4			
Queuing Penalty (veh)		1	6			

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	NB	SB
Directions Served	TR	TR
Maximum Queue (ft)	244	13
Average Queue (ft)	86	0
95th Queue (ft)	285	9
Link Distance (ft)	240	288
Upstream Blk Time (%)	27	
Queuing Penalty (veh)	289	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
2024 Buildout AM Peak LOOP RAMP

11/22/2015

Intersection: 8: Cummings St. & Country Club Dr.

Movement	EB	EB	B38	WB	B39	NB	NB	NB	SB	SB
Directions Served	LT	R	T	LTR	T	L	T	R	L	T
Maximum Queue (ft)	439	110	182	285	284	21	667	62	96	184
Average Queue (ft)	281	29	89	141	115	2	381	3	30	75
95th Queue (ft)	581	87	342	438	530	12	993	37	72	153
Link Distance (ft)	506		354	409	746		992			240
Upstream Blk Time (%)	25	0	24	21	12		25			0
Queuing Penalty (veh)	0	0	0	0	0		0			0
Storage Bay Dist (ft)		400				150		150	200	
Storage Blk Time (%)		26					33			0
Queuing Penalty (veh)		27					5			0

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	163	180	136	71
Average Queue (ft)	64	94	64	30
95th Queue (ft)	123	156	110	63
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 382

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:00	4:00	4:00	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120	120	120	120
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	5622	5704	5739	5620	5621	5598	5693
Vehs Exited	5615	5714	5718	5597	5631	5624	5695
Starting Vehs	152	170	149	156	174	172	169
Ending Vehs	159	160	170	179	164	146	167
Denied Entry Before	0	3	1	1	3	2	0
Denied Entry After	1	1	0	1	1	2	3
Travel Distance (mi)	3180	3231	3239	3162	3185	3174	3198
Travel Time (hr)	166.4	169.8	171.1	164.7	165.9	165.2	165.8
Total Delay (hr)	50.1	52.1	52.7	49.5	49.6	48.9	48.9
Total Stops	5309	5481	5481	5264	5289	5242	5283
Fuel Used (gal)	119.3	121.5	122.1	117.7	119.0	118.1	119.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:00	4:00	4:00	4:00
End Time	6:00	6:00	6:00	6:00
Total Time (min)	120	120	120	120
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	5704	5761	5649	5670
Vehs Exited	5722	5741	5637	5671
Starting Vehs	161	157	156	160
Ending Vehs	143	177	168	162
Denied Entry Before	1	2	1	0
Denied Entry After	4	1	2	0
Travel Distance (mi)	3214	3234	3180	3200
Travel Time (hr)	169.4	171.8	165.7	167.6
Total Delay (hr)	51.9	53.6	49.4	50.7
Total Stops	5421	5512	5244	5353
Fuel Used (gal)	120.9	121.9	118.2	119.8

Interval #0 Information Seeding

Start Time	4:00
End Time	5:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	5622	5704	5739	5620	5621	5598	5693
Vehs Exited	5615	5714	5718	5597	5631	5624	5695
Starting Vehs	152	170	149	156	174	172	169
Ending Vehs	159	160	170	179	164	146	167
Denied Entry Before	0	3	1	1	3	2	0
Denied Entry After	1	1	0	1	1	2	3
Travel Distance (mi)	3180	3231	3239	3162	3185	3174	3198
Travel Time (hr)	166.4	169.8	171.1	164.7	165.9	165.2	165.8
Total Delay (hr)	50.1	52.1	52.7	49.5	49.6	48.9	48.9
Total Stops	5309	5481	5481	5264	5289	5242	5283
Fuel Used (gal)	119.3	121.5	122.1	117.7	119.0	118.1	119.1

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	5704	5761	5649	5670
Vehs Exited	5722	5741	5637	5671
Starting Vehs	161	157	156	160
Ending Vehs	143	177	168	162
Denied Entry Before	1	2	1	0
Denied Entry After	4	1	2	0
Travel Distance (mi)	3214	3234	3180	3200
Travel Time (hr)	169.4	171.8	165.7	167.6
Total Delay (hr)	51.9	53.6	49.4	50.7
Total Stops	5421	5512	5244	5353
Fuel Used (gal)	120.9	121.9	118.2	119.8

1: Cook St/Proposed Access & Cummings St. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.6
Denied Del/Veh (s)	0.2	0.2	3.6	0.9	0.1	0.0	0.1	1.0	0.3	0.3	0.7
Total Delay (hr)	2.0	0.8	3.2	1.3	1.5	4.1	0.5	3.5	5.0	1.9	23.9
Total Del/Veh (s)	34.4	12.2	34.5	12.3	25.0	33.0	4.4	29.5	30.3	25.9	24.2
Stop Delay (hr)	1.9	0.7	2.9	1.1	1.3	3.5	0.0	2.4	3.6	1.3	18.8
Stop Del/Veh (s)	31.4	11.0	31.3	11.1	20.9	28.0	0.2	20.4	21.5	18.4	19.0
Total Stops	173	224	263	306	193	334	7	380	425	189	2494
Stop/Veh	0.81	0.91	0.79	0.82	0.87	0.74	0.02	0.90	0.71	0.72	0.70
Travel Dist (mi)	48.1	56.1	13.3	15.0	44.5	89.7	84.0	179.7	255.6	112.9	898.9
Travel Time (hr)	4.1	3.2	4.1	2.1	3.2	7.3	3.7	9.8	13.7	5.9	57.0
Avg Speed (mph)	12	17	4	7	14	12	23	19	19	19	16
Fuel Used (gal)	1.9	1.8	1.3	0.8	1.8	4.0	2.8	5.9	8.6	3.6	32.3
Fuel Eff. (mpg)	25.3	31.4	10.4	19.9	24.3	22.6	30.3	30.6	29.8	31.4	27.8
HC Emissions (g)	12	15	5	5	15	40	30	51	76	35	284
CO Emissions (g)	313	364	197	149	510	1204	928	1118	1828	782	7392
NOx Emissions (g)	38	47	16	18	51	124	101	155	233	102	885
Vehicles Entered	208	242	325	367	220	444	430	415	589	260	3500
Vehicles Exited	208	242	326	370	220	444	430	412	589	260	3501
Hourly Exit Rate	208	242	326	370	220	444	430	412	589	260	3501
Input Volume	212	244	324	370	223	447	422	419	590	254	3505
% of Volume	98	99	101	100	99	99	102	98	100	102	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

5: Cummings St. & I-81 SB Ramps Performance by movement

Movement	WBL	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.1	0.1	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.4	0.5	0.0	0.0	0.0	0.0	0.2
Total Delay (hr)	1.0	1.3	0.6	1.3	2.4	0.7	7.3
Total Del/Veh (s)	41.6	12.9	22.4	6.2	12.2	5.3	10.6
Stop Delay (hr)	1.0	1.1	0.5	0.8	1.3	0.3	4.9
Stop Del/Veh (s)	38.6	11.0	20.2	3.7	6.5	2.0	7.1
Total Stops	76	293	82	164	216	142	973
Stop/Veh	0.84	0.81	0.88	0.23	0.30	0.29	0.39
Travel Dist (mi)	13.6	55.0	5.8	45.8	145.0	98.1	363.3
Travel Time (hr)	1.6	3.5	0.8	2.8	7.6	4.6	20.9
Avg Speed (mph)	9	16	7	16	19	21	18
Fuel Used (gal)	0.7	1.7	0.3	1.7	5.8	3.5	13.7
Fuel Eff. (mpg)	20.7	31.9	21.3	26.7	24.9	27.7	26.5
HC Emissions (g)	6	15	2	15	54	44	135
CO Emissions (g)	188	448	62	426	1628	1374	4126
NOx Emissions (g)	17	42	5	53	198	144	461
Vehicles Entered	88	358	91	724	710	480	2451
Vehicles Exited	88	356	92	724	710	481	2451
Hourly Exit Rate	88	356	92	724	710	481	2451
Input Volume	91	355	91	722	716	479	2454
% of Volume	97	100	101	100	99	100	100
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

6: I-81 NB Ramps & Cummings St. Performance by movement

Movement	NBT	NBR	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.4	0.0	0.3	0.2	1.0
Total Del/Veh (s)	1.8	1.6	2.5	2.1	2.0
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	0.2	0.2	0.2	0.2	0.2
Total Stops	6	0	7	3	16
Stop/Veh	0.01	0.00	0.01	0.01	0.01
Travel Dist (mi)	47.3	5.6	31.5	21.4	105.9
Travel Time (hr)	2.3	0.3	1.4	1.0	5.0
Avg Speed (mph)	21	20	22	22	21
Fuel Used (gal)	2.7	0.3	1.3	0.8	5.0
Fuel Eff. (mpg)	17.8	19.5	24.7	27.2	21.2
HC Emissions (g)	31	2	12	8	53
CO Emissions (g)	992	82	371	233	1678
NOx Emissions (g)	130	11	48	32	220
Vehicles Entered	821	114	476	323	1734
Vehicles Exited	820	114	474	323	1731
Hourly Exit Rate	820	114	474	323	1731
Input Volume	818	119	481	327	1745
% of Volume	100	96	99	99	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

8: Cummings St. & Country Club Dr. Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.3
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.0	0.4	3.2	0.8	1.4	0.6
Total Delay (hr)	3.9	0.7	0.1	0.2	0.0	1.7	0.0	0.5	1.8	8.8
Total Del/Veh (s)	36.8	12.1	24.3	7.8	11.7	13.2	2.3	19.1	10.7	17.0
Stop Delay (hr)	3.4	0.6	0.1	0.2	0.0	1.2	0.0	0.4	1.3	7.2
Stop Del/Veh (s)	31.9	11.1	22.6	7.7	8.8	9.2	1.5	16.8	7.7	13.8
Total Stops	338	134	7	76	3	197	6	64	196	1021
Stop/Veh	0.89	0.66	0.70	0.76	0.75	0.42	0.43	0.71	0.33	0.55
Travel Dist (mi)	40.1	21.3	0.9	9.0	0.7	87.2	2.6	3.9	26.6	192.3
Travel Time (hr)	5.4	1.6	0.1	0.6	0.0	4.7	0.1	0.7	2.9	16.1
Avg Speed (mph)	7	14	9	15	18	19	24	6	10	12
Fuel Used (gal)	1.8	0.7	0.0	0.2	0.0	2.8	0.1	0.2	1.4	7.3
Fuel Eff. (mpg)	22.1	32.4	27.3	37.2	28.1	31.0	32.8	17.2	18.9	26.3
HC Emissions (g)	9	7	0	2	0	27	0	1	10	57
CO Emissions (g)	247	202	2	39	6	636	19	49	319	1518
NOx Emissions (g)	26	17	0	5	0	76	1	5	37	169
Vehicles Entered	377	201	10	100	4	460	14	89	595	1850
Vehicles Exited	377	201	10	100	4	459	14	89	595	1849
Hourly Exit Rate	377	201	10	100	4	459	14	89	595	1849
Input Volume	383	196	10	101	4	453	12	93	602	1854
% of Volume	98	103	100	99	100	101	117	96	99	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.5	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.1	0.2	0.2
Total Delay (hr)	0.0	1.0	0.1	0.5	1.7	0.0	0.2	0.4	0.4	0.2	0.3	0.0
Total Del/Veh (s)	10.6	7.8	5.7	19.0	15.0	13.3	15.7	18.4	11.0	16.5	17.2	8.3
Stop Delay (hr)	0.0	0.6	0.0	0.4	1.2	0.0	0.2	0.3	0.3	0.2	0.2	0.0
Stop Del/Veh (s)	7.3	4.3	3.4	14.9	10.6	9.9	13.0	15.1	9.4	14.4	14.7	7.2
Total Stops	7	201	17	77	256	4	42	63	95	29	44	14
Stop/Veh	0.70	0.41	0.45	0.85	0.61	0.67	0.75	0.81	0.82	0.76	0.79	0.78
Travel Dist (mi)	2.0	103.8	8.0	25.3	115.6	1.7	3.1	4.4	6.6	2.6	3.8	1.2
Travel Time (hr)	0.1	5.3	0.4	1.5	6.5	0.1	0.4	0.6	0.7	0.3	0.4	0.1
Avg Speed (mph)	18	20	20	17	18	18	8	8	10	9	9	12
Fuel Used (gal)	0.1	3.3	0.2	0.8	3.7	0.1	0.2	0.2	0.3	0.1	0.2	0.0
Fuel Eff. (mpg)	31.1	31.9	33.2	30.5	31.0	31.5	19.5	18.7	21.9	20.9	21.2	25.3
HC Emissions (g)	0	19	3	6	24	0	1	2	3	1	2	0
CO Emissions (g)	6	517	63	137	596	5	42	64	87	27	54	10
NOx Emissions (g)	1	71	9	19	84	1	5	7	9	3	6	1
Vehicles Entered	9	480	37	90	412	6	55	78	116	37	56	18
Vehicles Exited	10	480	37	90	412	6	55	78	115	38	56	18
Hourly Exit Rate	10	480	37	90	412	6	55	78	115	38	56	18
Input Volume	10	468	39	89	408	5	54	77	112	42	56	17
% of Volume	100	103	95	101	101	120	102	101	103	90	100	106
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

9: Pecan St. & E. Main St. Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.4
Total Delay (hr)	4.9
Total Del/Veh (s)	12.4
Stop Delay (hr)	3.5
Stop Del/Veh (s)	8.9
Total Stops	849
Stop/Veh	0.60
Travel Dist (mi)	278.2
Travel Time (hr)	16.4
Avg Speed (mph)	17
Fuel Used (gal)	9.2
Fuel Eff. (mpg)	30.2
HC Emissions (g)	61
CO Emissions (g)	1609
NOx Emissions (g)	215
Vehicles Entered	1394
Vehicles Exited	1395
Hourly Exit Rate	1395
Input Volume	1377
% of Volume	101
Denied Entry Before	0
Denied Entry After	0

10: Retail Rd. #1 & Green Springs Connector Performance by movement

Movement	EBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.4	0.4
Total Del/Veh (s)	1.7	1.7
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.1	0.1
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	44.6	44.6
Travel Time (hr)	2.6	2.6
Avg Speed (mph)	17	17
Fuel Used (gal)	3.6	3.6
Fuel Eff. (mpg)	12.5	12.5
HC Emissions (g)	48	48
CO Emissions (g)	2114	2114
NOx Emissions (g)	176	176
Vehicles Entered	843	843
Vehicles Exited	843	843
Hourly Exit Rate	843	843
Input Volume	841	841
% of Volume	100	100
Denied Entry Before	0	0
Denied Entry After	0	0

11: Green Springs Connector & Retail Rd. #2 Performance by movement

Movement	SBT	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.0	0.0
Total Del/Veh (s)	0.2	0.2
Stop Delay (hr)	0.0	0.0
Stop Del/Veh (s)	0.0	0.0
Total Stops	0	0
Stop/Veh	0.00	0.00
Travel Dist (mi)	13.8	13.8
Travel Time (hr)	0.5	0.5
Avg Speed (mph)	29	29
Fuel Used (gal)	0.4	0.4
Fuel Eff. (mpg)	33.6	33.6
HC Emissions (g)	5	5
CO Emissions (g)	107	107
NOx Emissions (g)	15	15
Vehicles Entered	183	183
Vehicles Exited	183	183
Hourly Exit Rate	183	183
Input Volume	184	184
% of Volume	99	99
Denied Entry Before	0	0
Denied Entry After	0	0

Total Network Performance

Denied Delay (hr)	1.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	49.3
Total Del/Veh (s)	30.5
Stop Delay (hr)	34.7
Stop Del/Veh (s)	21.4
Total Stops	5353
Stop/Veh	0.92
Travel Dist (mi)	3199.6
Travel Time (hr)	167.6
Avg Speed (mph)	19
Fuel Used (gal)	119.8
Fuel Eff. (mpg)	26.7
HC Emissions (g)	1198
CO Emissions (g)	34319
NOx Emissions (g)	3908
Vehicles Entered	5670
Vehicles Exited	5671
Hourly Exit Rate	5671
Input Volume	17943
% of Volume	32
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: NB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Country Club Dr.	8	13.2	36.3	0.2	20
I-81 NB Ramps	6	2.0	9.0	0.1	22
I-81 SB Ramps	5	6.2	13.9	0.1	17
Proposed Access	1	36.1	60.4	0.2	12
Total		57.6	119.5	0.5	16

Arterial Level of Service: SB Cummings St.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Cook St	1	30.3	82.4	0.4	19
I-81 SB Ramps	5	8.2	32.4	0.2	23
I-81 NB Ramps	6	2.7	10.7	0.1	22
	8	10.7	17.5	0.1	12
Total		51.9	143.0	0.8	20

Queuing and Blocking Report
2024 Buildout PM Peak LOOP RAMP

11/23/2015

Intersection: 1: Cook St/Proposed Access & Cummings St.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	231	167	228	180	225	184	218	223	159	200	466	430
Average Queue (ft)	122	79	168	14	107	94	110	118	14	166	229	223
95th Queue (ft)	204	137	242	104	179	163	180	183	98	232	397	360
Link Distance (ft)	1223	1223				1018	1018			2294	2294	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			200			100			100	100		
Storage Blk Time (%)			7	0		7	12	16		27	26	
Queuing Penalty (veh)			0	0		17	26	67		79	108	

Intersection: 5: Cummings St. & I-81 SB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	132	217	105	295	383	162
Average Queue (ft)	59	97	45	121	154	59
95th Queue (ft)	110	173	87	241	303	132
Link Distance (ft)	808		288	1018	1018	
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			3			
Storage Bay Dist (ft)	200		200			
Storage Blk Time (%)	1		2			
Queuing Penalty (veh)	0		2			

Intersection: 6: I-81 NB Ramps & Cummings St.

Movement	NB	SB
Directions Served	TR	TR
Maximum Queue (ft)	109	123
Average Queue (ft)	4	8
95th Queue (ft)	48	63
Link Distance (ft)	240	288
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
2024 Buildout PM Peak LOOP RAMP

11/23/2015

Intersection: 8: Cummings St. & Country Club Dr.

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	T	R	L	T
Maximum Queue (ft)	354	163	87	24	292	20	156	244
Average Queue (ft)	206	68	33	2	133	3	45	147
95th Queue (ft)	314	125	68	15	241	15	101	239
Link Distance (ft)	506		409		992		240	
Upstream Blk Time (%)						0	1	
Queuing Penalty (veh)						0	4	
Storage Bay Dist (ft)		400		150		150	200	
Storage Blk Time (%)	0				5		3	
Queuing Penalty (veh)	0				1		2	

Intersection: 9: Pecan St. & E. Main St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	206	308	168	111
Average Queue (ft)	101	143	83	49
95th Queue (ft)	172	260	140	90
Link Distance (ft)	1139	1479		358
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Retail Rd. #1 & Green Springs Connector

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 11: Green Springs Connector & Retail Rd. #2

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 310



CDM
Smith